FOUNDED IN 1856

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RAILWAY AGE

OCTOBER 2, 1948

BASIS FOR LEADERSHIP

Leadership rests upon the ability to foresee, to develop, and to achieve — first.

On that critical basis, weigh the position of the General Motors Diesel locomotive.

It was pioneered by General Motors in 1934 and powered the first modern, high-speed, Diesel-driven passenger train — the famous Burlington Zephyr.

It has been continuously developed into the magnificent piece of motive power today preferred by railroads of America for the fastest, hardest jobs in both passenger and freight service.

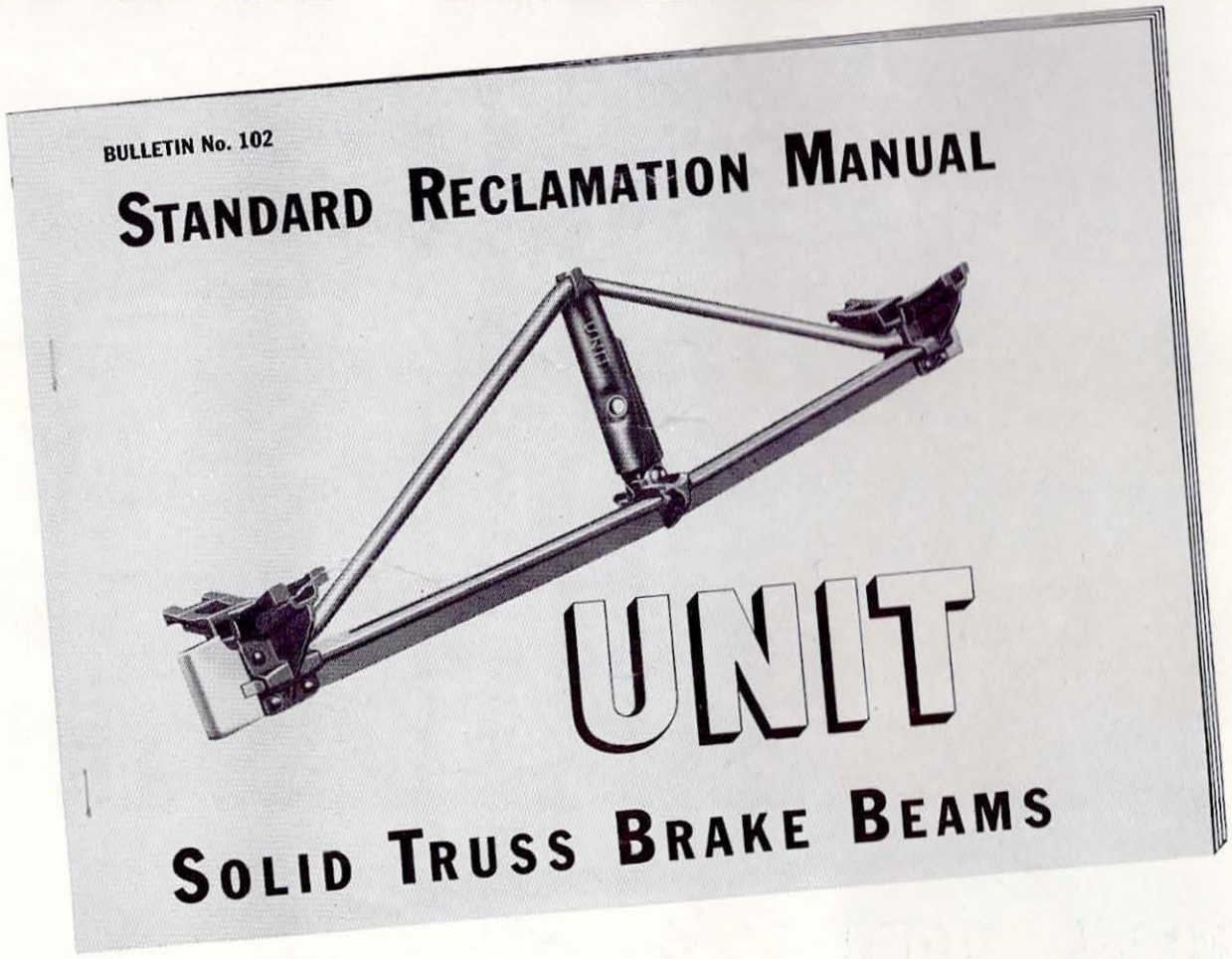
Its achievements — covering more than a billion unit miles in the nation's severest service — are known to every railroad man.

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS LA GRANGE, ILL.
Home of the Diesel Locomotive

GENERAL MOTORS LOCOMOTIVES

General Motors Diesel locomotives totaling more than 6,000,000 horsepower, are now in service on American railroads.

NOW READY—



This new Unit Bulletin No. 102 holds the key to the fast, economical handling of Unit Solid Truss Brake Beams in your reclamation plant. This valuable bulletin contains a full set of drawings covering Unit Brake Beams and parts currently in use, together with instructions for the handling of Unit stock, the replacement of wear plates, brake heads and struts, and the testing of reclaimed beams.

Purchasing agents, storekeepers, and mechanical personnel may receive copies for their own files by filling out the coupon below.

TEAR OUT AND MAIL TODAY

UNIT TRUCK CORPORATION
140 Cedar Street
New York 6, N. Y.

Please send me a copy of your Bulletin No. 102—STANDARD RECLAMATION MANUAL FOR UNIT SOLID TRUSS BRAKE BEAMS

Name_____ RR_____

Address_____

Title_____

Published weekly by Simmons-Boardman Publishing Corporation, Orange, Conn. Executive Offices, 30 Church Street, New York 7, N. Y. Entered as second class matter at Orange, Conn., under the act of March 3, 1879. Subscription price $6.00 for one year, U. S. and Canada. Single copies 50 cents each. Vol. 125, No. 14.

The Pennsylvania's famed Broadway Limited, all-Pullman train, leaving Chicago for the East.

None Finer Anywhere

One measure of a railroad's greatness is the service it renders, and dependable equipment is the backbone of dependable service . . . On most of the country's leading railroads, Bethlehem wrought-steel wheels are a part of the first-line equipment. This in itself is convincing evidence of their quality—of their ability to do a thoroughly dependable job under heavy loads and at high speeds . . . No matter how exacting your standards of service, these long-lasting wheels warrant your complete confidence. You cannot buy finer ones anywhere.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by
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BETHLEHEM STEEL

Bethlehem WROUGHT-STEEL WHEELS

HOW NEW YORK CENTRAL *Overrules a*

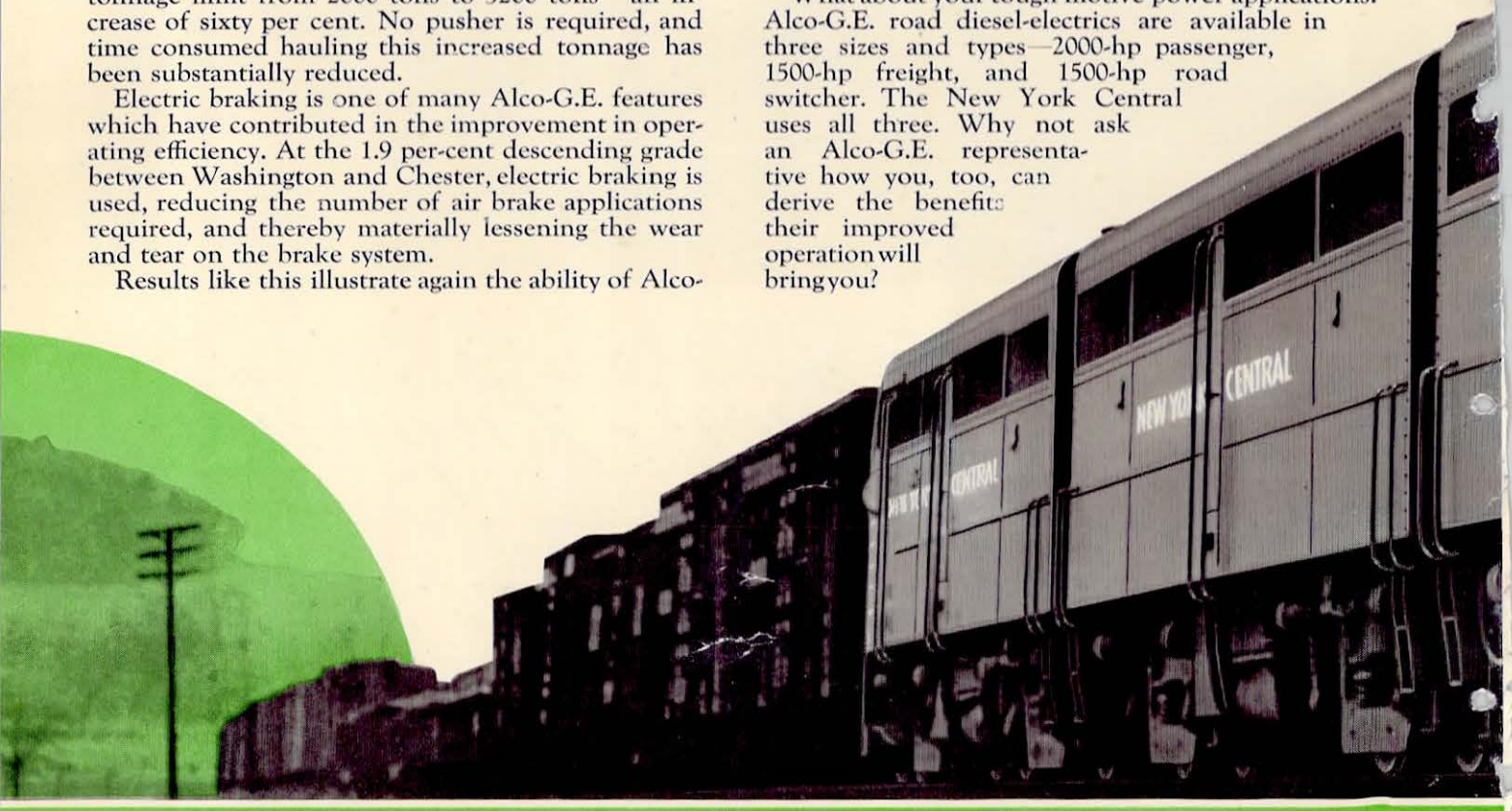
. . . On the Albany Division, Alco-G.E. diesel-electrics boost train tonnage limits sixty per cent!

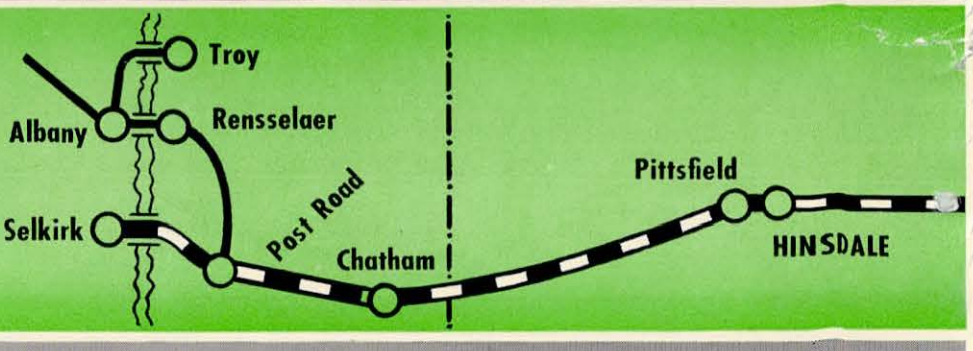
Until recently, freight trains hauled by steam power between Selkirk and West Springfield, were limited to 2000 tons, single-headed, with help required at the 1.6 per-cent Hinsdale grade. Now, three-unit, 4500-hp, Alco-G.E. freight diesel-electrics have raised this tonnage limit from 2000 tons to 3200 tons—an increase of sixty per cent. No pusher is required, and time consumed hauling this increased tonnage has been substantially reduced.

Electric braking is one of many Alco-G.E. features which have contributed in the improvement in operating efficiency. At the 1.9 per-cent descending grade between Washington and Chester, electric braking is used, reducing the number of air brake applications required, and thereby materially lessening the wear and tear on the brake system.

Results like this illustrate again the ability of Alco-G.E. locomotives to haul more ton- and passenger-miles in less time, and at lower cost. With these new locomotives, New York Central's Albany Division is speeding up service to shippers, and strengthening its competitive position.

What about your tough motive-power applications? Alco-G.E. road diesel-electrics are available in three sizes and types—2000-hp passenger, 1500-hp freight, and 1500-hp road switcher. The New York Central uses all three. Why not ask an Alco-G.E. representative how you, too, can derive the benefits their improved operation will bring you?





Alco GE

AMERICAN LOCOMOTIVE

Ruling Grade

Built TO INCREASE YOUR RAILROAD'S EARNING POWER

W. Springfield → To Boston

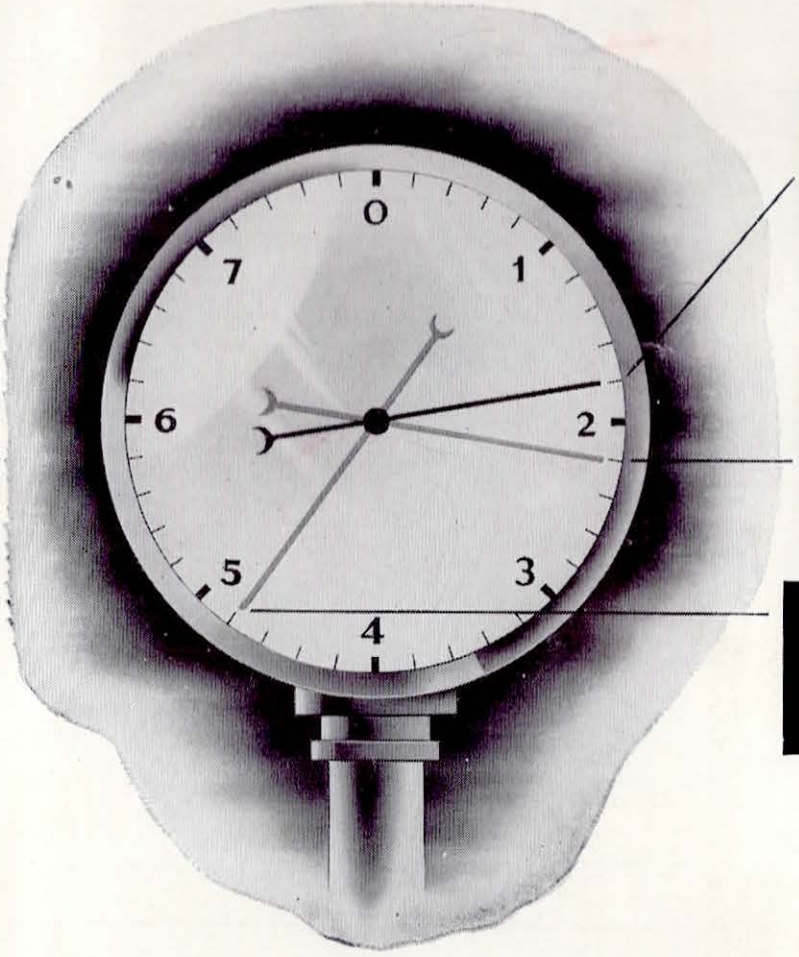
In Canada Alco GE is MLW GE

and GENERAL ELECTRIC

113-220

CUT DEADWEIGHT

FROM YOUR COACH PARTITIONS AND DOORS



PLYMETL (aluminum)
1.8 lbs. per square ft.

HOLLOW ALUMINUM
2.2 lbs. per square ft.

HOLLOW STEEL
4.8 lbs. per square ft.

The above weights show that ½" Plymetl (aluminum two sides) saves from .4 pounds to 3 pounds per square foot over other types of construction.

For example, if your coach has 400 square feet of partitions, a comparison would show:

Hollow steel partitions will weigh	1920 lbs.
Plymetl partitions (½" UVU) will weigh	720 lbs.
Plymetl will save	1200 lbs.

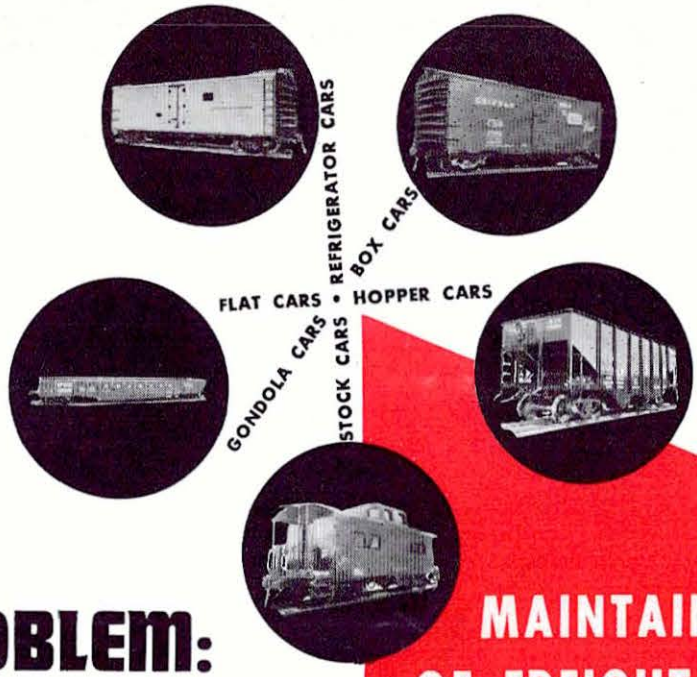
Twelve hundred pounds of deadweight is eliminated in 400 square feet of partitions!

Plan with Plymetl. It reduces man hours, cuts finishing costs and makes quieter partitions.

HASKELITE

PLYMETL

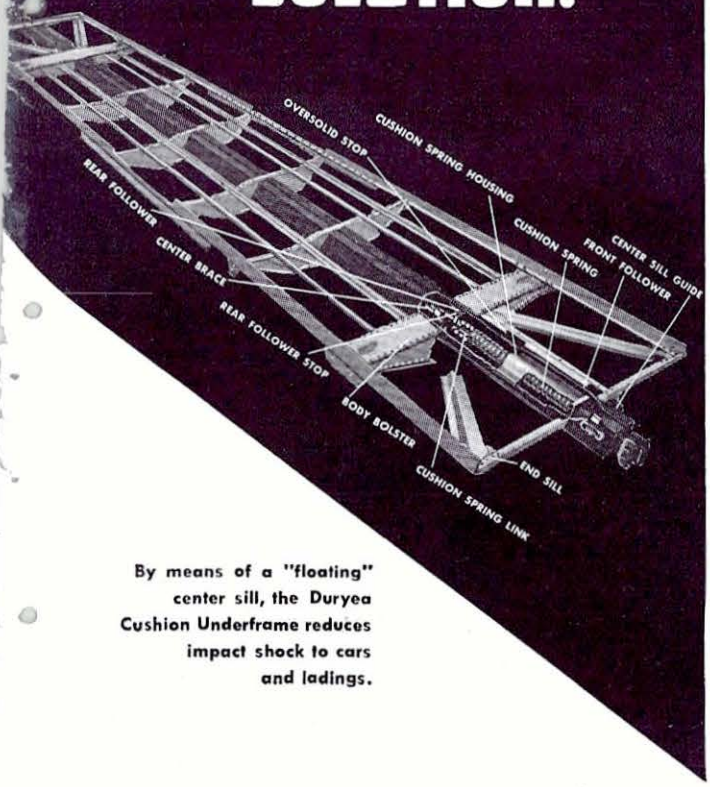
HASKELITE
MANUFACTURING CORPORATION
Department RY-1
Grand Rapids 2, Michigan



PROBLEM:

MAINTAIN A FLEET OF FREIGHT CARS FOR 93,771 CAR YEARS FOR ONLY 3c TO 29c PER CAR PER YEAR

SOLUTION:



By means of a "floating" center sill, the Duryea Cushion Underframe reduces impact shock to cars and ladings.

EQUIP WITH DURYEA CUSHION UNDERFRAME AS 5 *MORE* RAILROADS DID

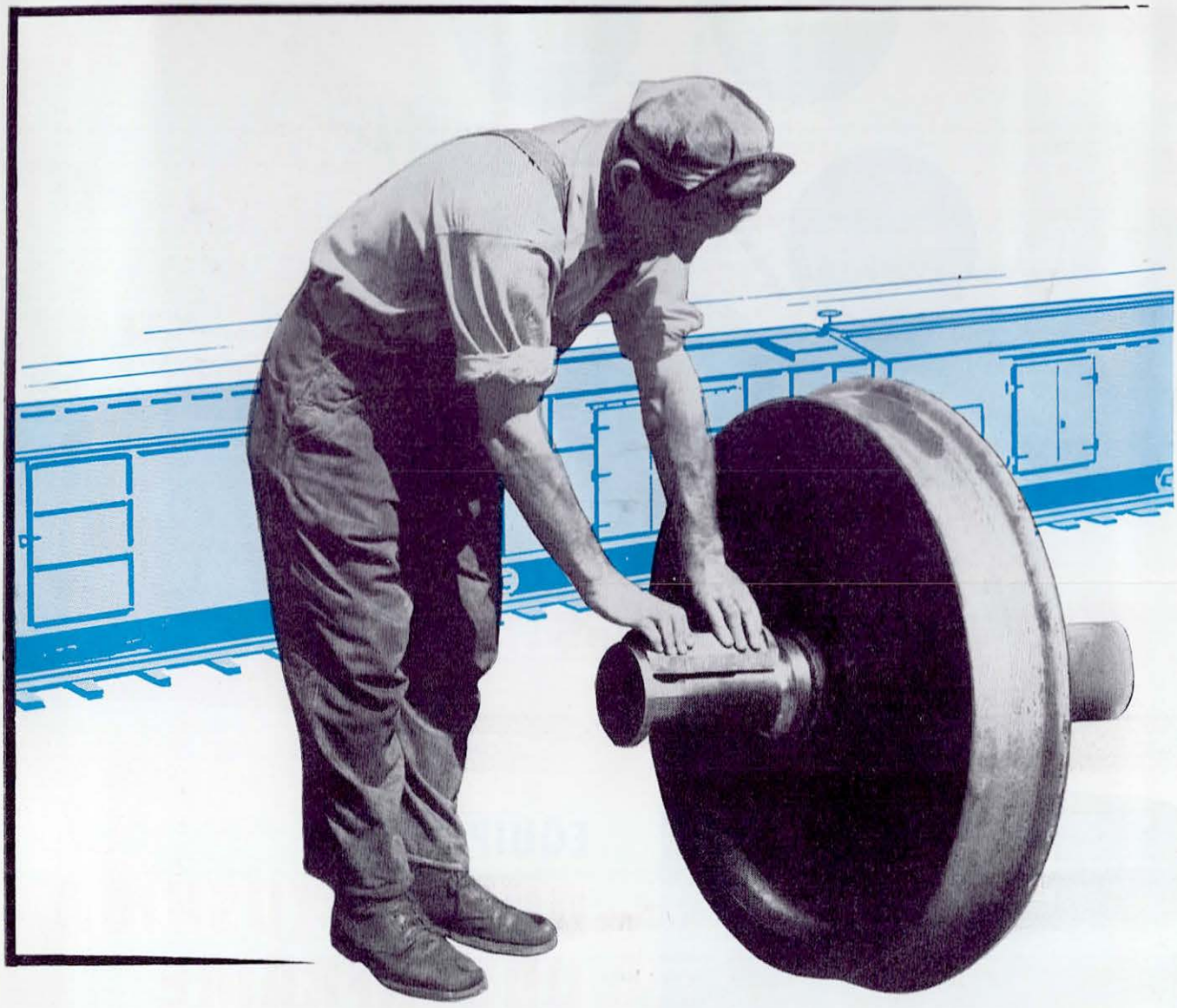
Actual records show that five major railroads spent as little as 3c per car per year to maintain their Duryea equipped cars! Duryea equipment makes cars last longer. Car "absenteeism" is reduced because Duryea means less time lost in maintenance.

And Duryea equipment protects ladings, reduces damage claims.

Write today for Bulletin RD1 for full particulars on how Duryea Cushion Underframes can cut your operating costs.

O. C. DURYEA CORPORATION

FIELD BUILDING CHICAGO 3, ILLINOIS



NOW...You can get "Pre-Seated" JOURNAL BEARINGS at no extra cost!

Here, at last, is a practical Compound Bore Journal Bearing — made available at no extra cost by National Bearing Division and already proved on the rolling stock of many leading railroads. These roads have found that N-B-M Compound Bore Journal Bearings are contributing greatly to the reduction of hot boxes and lowering operating costs.

The N-B-M Compound Bore Journal Bearing insures greater journal-contact area — quicker run-in — and a precision machined fit on standard axles that is superior to hand scraping.

ONLY NATIONAL BEARING DIVISION PRODUCES THE COMPOUND BORE JOURNAL BEARING

N·B·M

AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION

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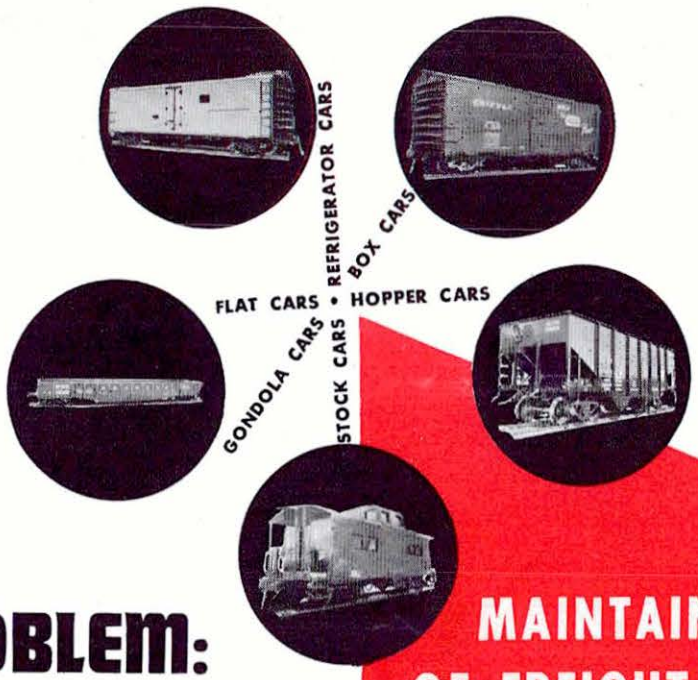

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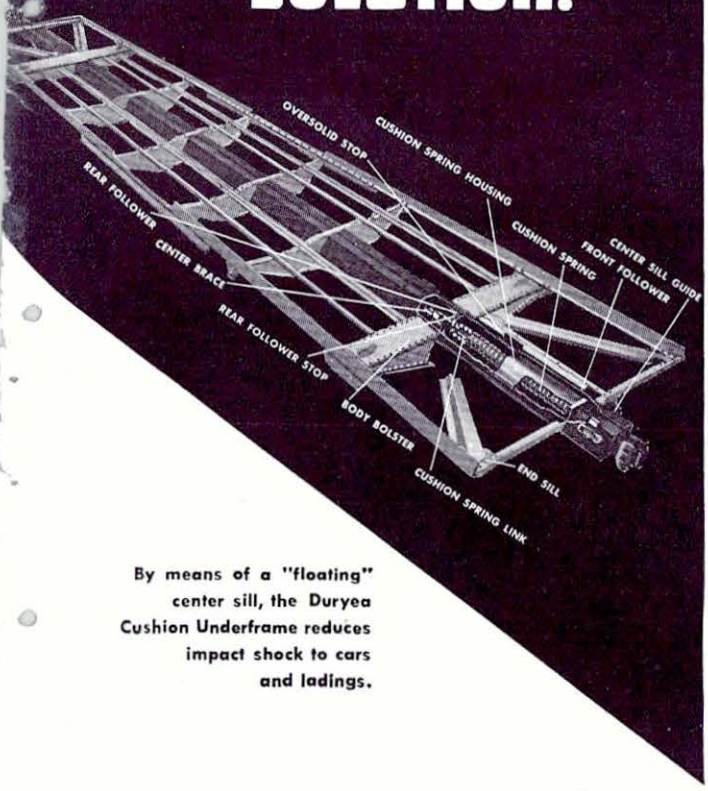

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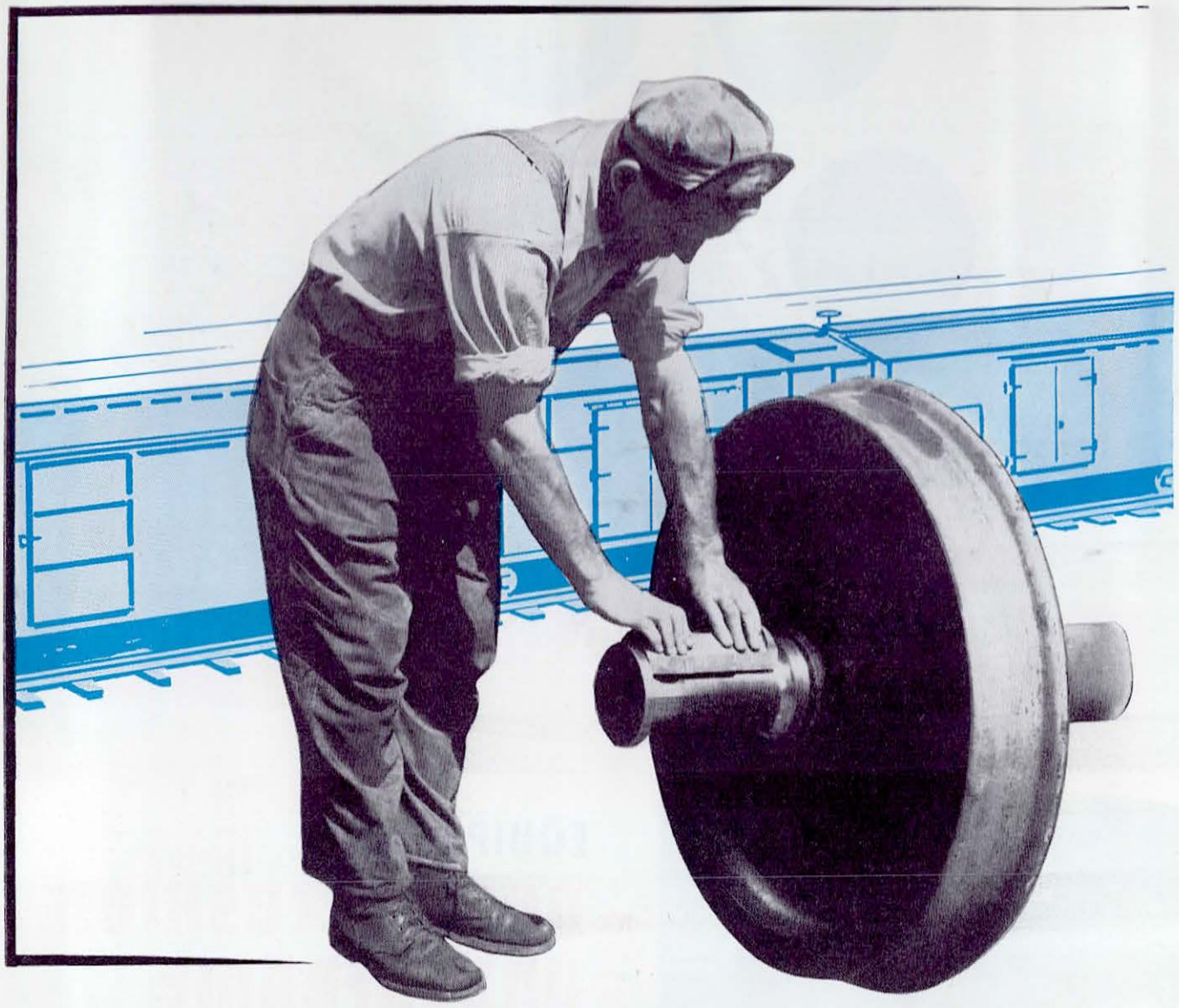

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N·B·M

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AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION

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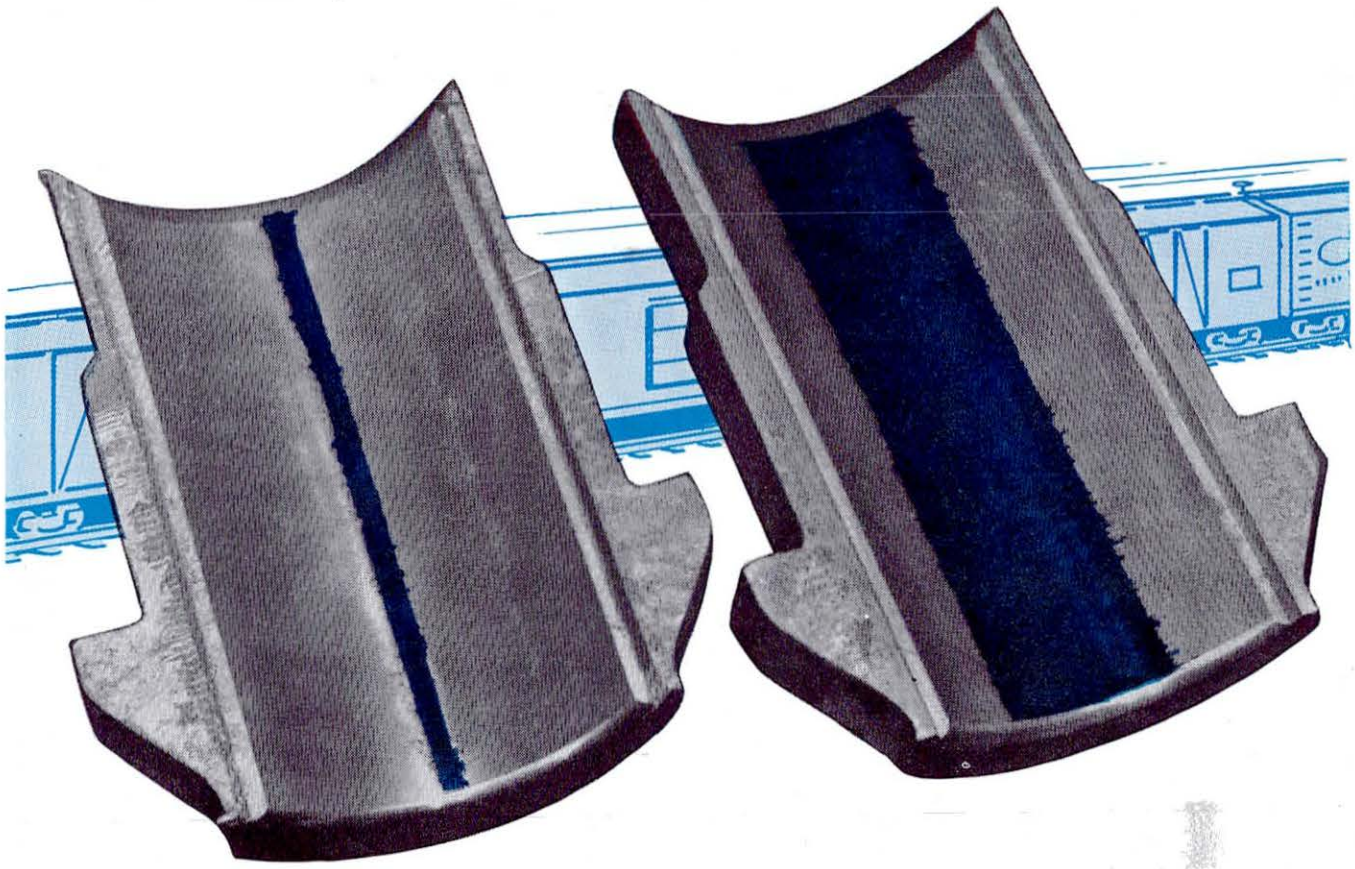

The N-B-M *Compound Bore* JOURNAL BEARING

effects BIG Time and Money Savings

This precision-machined Compound Bore Journal Bearing insures a perfect fit—and has a greater journal contact area right from the start.

The actual "blue-in" process best describes the big difference between the compound bore and standard journal bearings. Note the wider initial contact area of the compound bore bearing shown above at right. This wide contact area is assured by precision-machining — no hand scraping is necessary for proper, low-temperature run-in. The N-B-M Compound Bore Journal Bearing is ready for service as shipped.

The wider contact area of N-B-M Compound Bore Journal Bearings is made possible by imposing a secondary bore in the bore of the standard journal bearing. Better lubrication is thus insured, right from the start. The wide contact area provides maximum fluid film pressures, which reduce bearing operating temperatures during the critical run-in period. And, the compound bore provides a better fit on undersized axles — minimizes the necessary conformation of the bearing to smaller axle sizes.

These features of N-B-M Compound Bore Journal Bearings insure better performance — particularly during initial bearing operation. Regardless of whether your problem is one of original bearing installation or of replacement, in freight or passenger service, have the nearest N-B-M representative call. Write for additional technical information on N-B-M Compound Bore Journal Bearings.

N·B·M

NATIONAL BEARING DIVISION SERVING AMERICA'S RAILROADS — FOR 74 YEARS

AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION

4930 Manchester Avenue • St. Louis 10, Mo.

ARE YOUR FREIGHT CARS MAKING FRIENDS AND INFLUENCING SHIPPERS?

Forward-looking railroad men are putting increased emphasis these days on the *appearance* of their freight equipment. They realize that in many parts of the country freight cars are their chief means of displaying their company name . . . and of reflecting the soundness and progressiveness of their organization.

The modern railroad's keen sense of good business . . . good public relations . . . is placing Du Pont DULUX Freight Car Finishes on more and more maintenance schedules. DULUX: proved for years as a tough, durable finish whose high gloss *holds* . . . despite smoke, fumes, cinders, hard knocks and weathering. DULUX: for long-term beauty and less frequent need for repainting. DULUX: to keep freight cars sparkling bright *wherever* they go!

E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.

DU PONT
REG. U.S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DULUX
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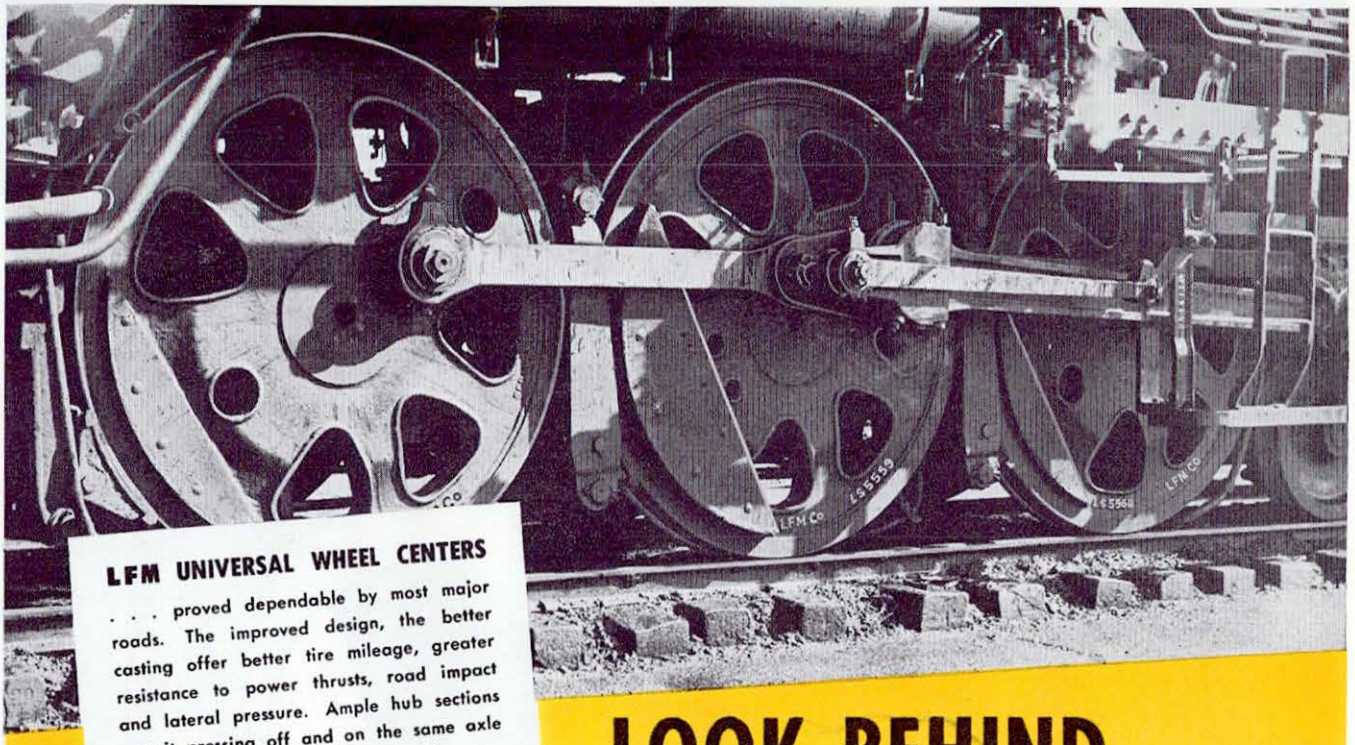
The Economy Freight Car Finish



LFM UNIVERSAL WHEEL CENTERS

. . . proved dependable by most major roads. The improved design, the better casting offer better tire mileage, greater resistance to power thrusts, road impact and lateral pressure. Ample hub sections permit pressing off and on the same axle without loss of required pressure fit.

LOOK BEHIND THESE WHEEL CENTERS

If You Have Other Railroad Casting Jobs Ahead

LFM Lightweight Alloy Steel Piston and Universal Sectional Packing Ring. Pioneered, developed and principally produced by LFM.

Behind LFM Universal Wheel Centers is a wealth of experience and facilities for producing the finest railroad castings. Two great LFM plants today are providing not only a great number of specialized railroad castings of LFM design but are providing additional castings for freight and passenger cars to several individual railroads' specifications. These two plants covering more than 12 acres are always available to the railroads in meeting future needs. At LFM, one organization under one management affords the most modern iron foundries, pattern shops, steel foundries, machine shops and engineering department . . . and for the casting of wearing parts, the LFM Air Furnace is unsurpassed.

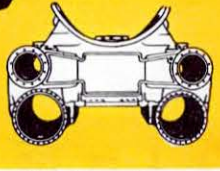
THE LOCOMOTIVE FINISHED MATERIAL CO.

NEW YORK CITY CHICAGO, ILL.

ATCHISON, KANS.
HOME OFFICE & PLANT

LFM ESTABLISHED 1872

Alloy Cast Steel Locomotive Cross Heads



One-Piece Locomotive Cylinder Castings

Valve Chamber Bushings of Air Furnace Iron

Diesel Locomotive One-Piece Truck Frames

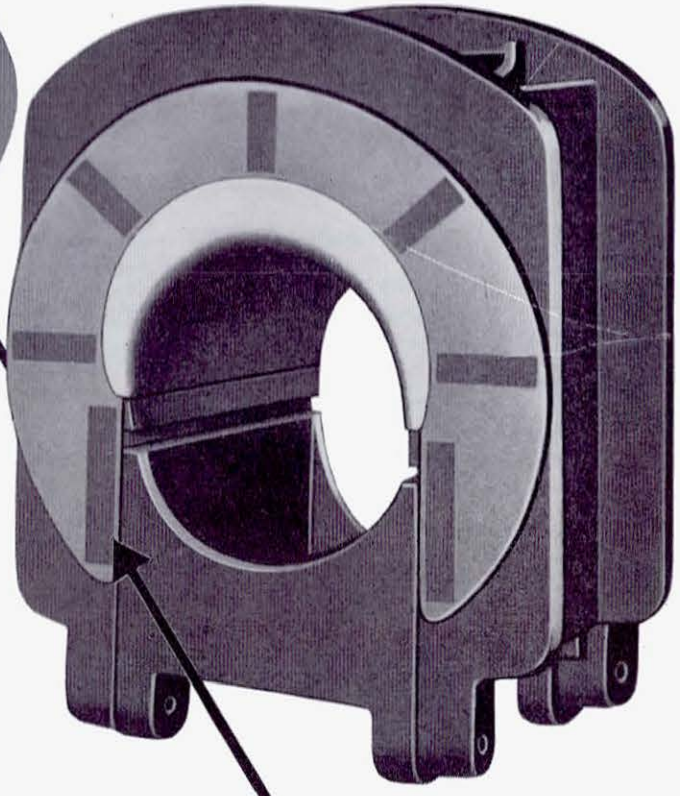
FOR 76 YEARS A MAJOR SOURCE OF SUPPLY FOR RAILROAD CASTINGS

Modern MAGNUS BEARINGS *Improved*

BRONZE INSERTS in Satco Facing

The Bronze Inserts in the Satco Metal Facing in the Driving Box, illustrated, hold down Hub Temperatures and increase endurance against both wear and impact.

Composite Bearings of this type are also applicable to Locomotive Trucks and Trailer Boxes.



Satco-Faced Locomotive Driving Box Facing with Bronze Inserts

SATCO *Bearing Metal*

MODERN HEAVY DUTY BEARINGS

MAGNUS METAL CORPORATION
CHICAGO NEW YORK

2526

Keep an eye on this track!

When it comes to locomotives . . .

Soon you'll see a locomotive that will reveal new concepts of the basic Diesel locomotive advantages . . .

FAIRBANKS-MORSE

A name worth remembering

The Governor of Washington *invites You*

State of Washington
EXECUTIVE DEPARTMENT
Olympia

MON C. WALLGREN
Governor

To American Industry:

Washington is a fast growing state. We are extending our war-time gains and making great strides forward. People are hard at work building more dams, laying out new towns, preparing new land for farms.

The Columbia River is the greatest single source of electrical power in the world. With low-cost power, our wealth of natural resources, and our maritime trade with Alaska and the Orient we are establishing a regional economy unrivalled in the nation.

Enterprising business men will find here new and exciting industrial opportunities. These include processing of raw materials, fabrication of new products, diversified trades to service a growing city and farm population.

Washington State is a good place in which to live, to work, to do business and to prosper.

Governor

Mon C. Wallgren

* One of a series of advertisements based on industrial opportunities in the states served by Union Pacific Railroad.

Unite with Union Pacific in selecting sites and seeking new markets in California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, Oregon, Utah, Washington, Wyoming.

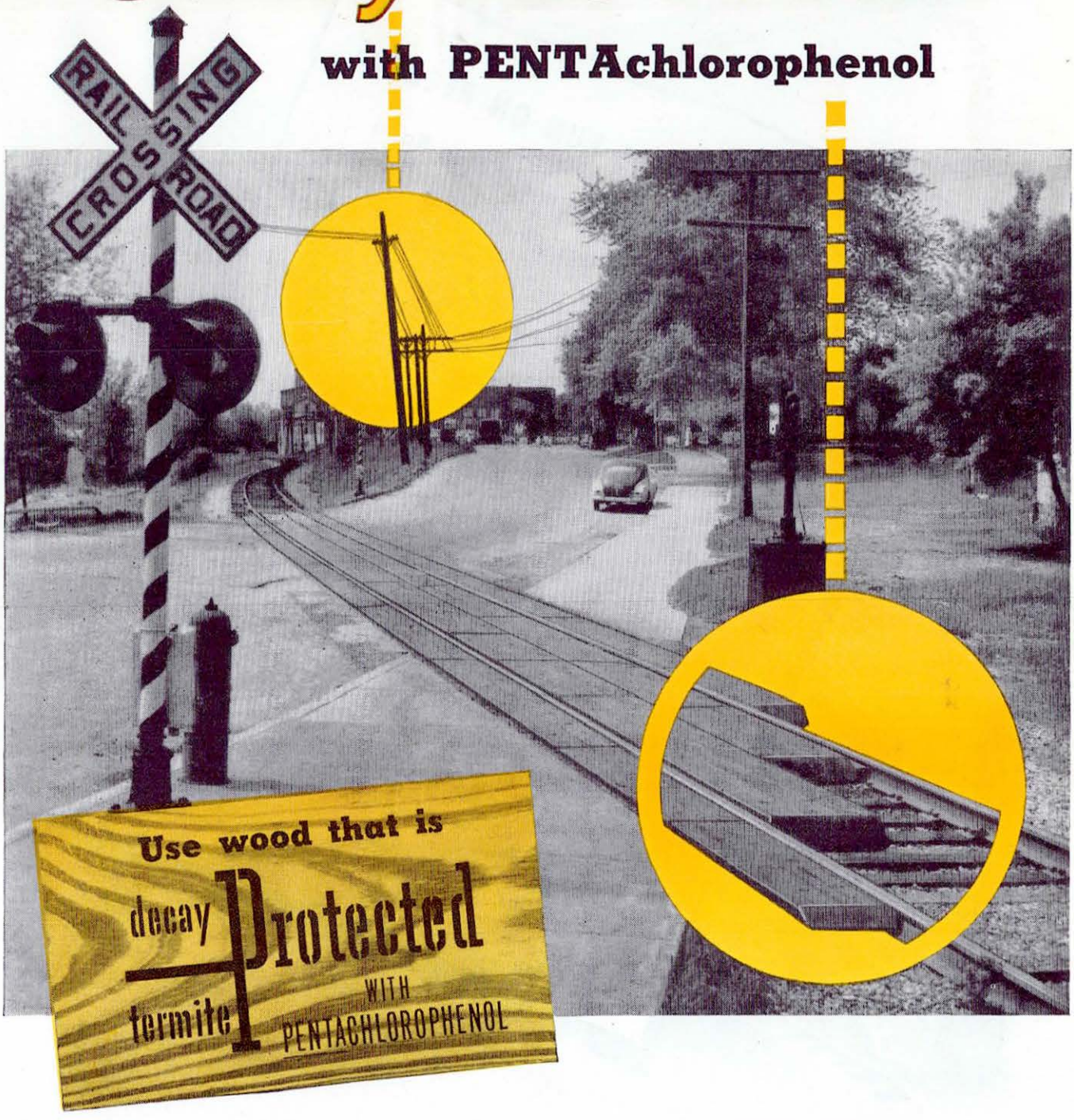
*Address Industrial Department, Union Pacific Railroad
Omaha 2, Nebraska

UNION PACIFIC RAILROAD

Road of the Daily Streamliners

Carry the load...

with PENTAchlorophenol



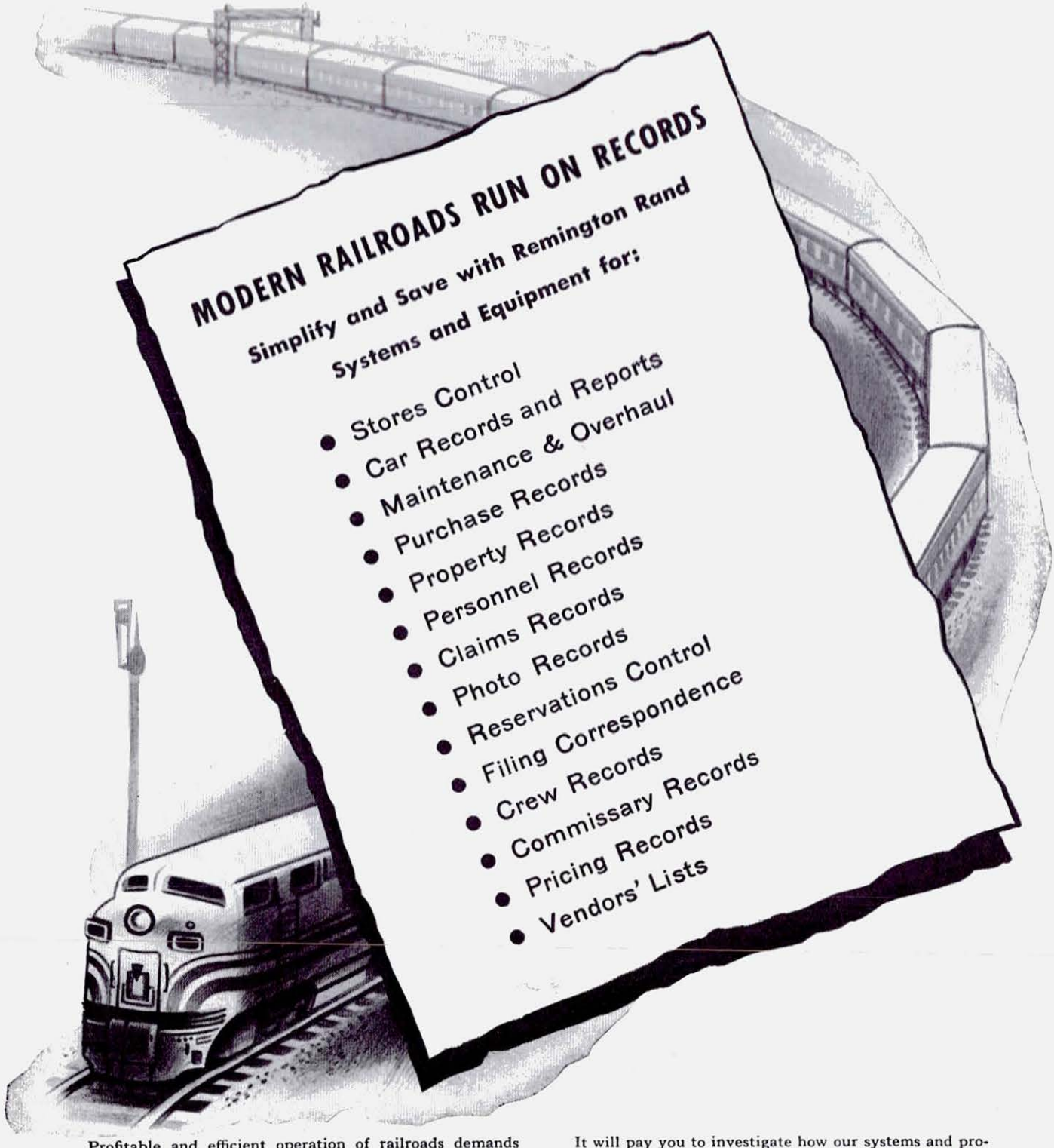
To say PENTACHLOROPHENOL is to say "it's dependable and clean"! This modern wood preservative *can be relied upon* for effective protection against decay and termite attack. Moreover, it will last for years to come.

PENTACHLOROPHENOL gives thoroughly tested protection to poles, ties, and planking—in fact, to all wood construction. For lasting preservative action and reduced maintenance costs, specify the PENTACHLOROPHENOL treatment.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

DOW

CHEMICALS INDISPENSABLE
TO INDUSTRY AND AGRICULTURE



Profitable and efficient operation of railroads demands *know-how* and *highly specialized* record keeping systems.

That's why many roads have turned to Remington Rand for help in simplifying operating procedures and eliminating cost-heavy systems. They realize that our systems and equipment are the result of years of scientific research and experience in working with railroads to analyze their individual problems and develop step-saving procedures.

It will pay you to investigate how our systems and procedures *can simplify and save in your operations.* Each record is patterned to meet your specific requirements, and installation, supervised by our staff of specialists, can be accomplished without interrupting your office routine during the change-over period.

For details, phone the Remington Rand office near you, or write Transportation Systems Department, 315 Fourth Avenue, New York 10, N. Y.

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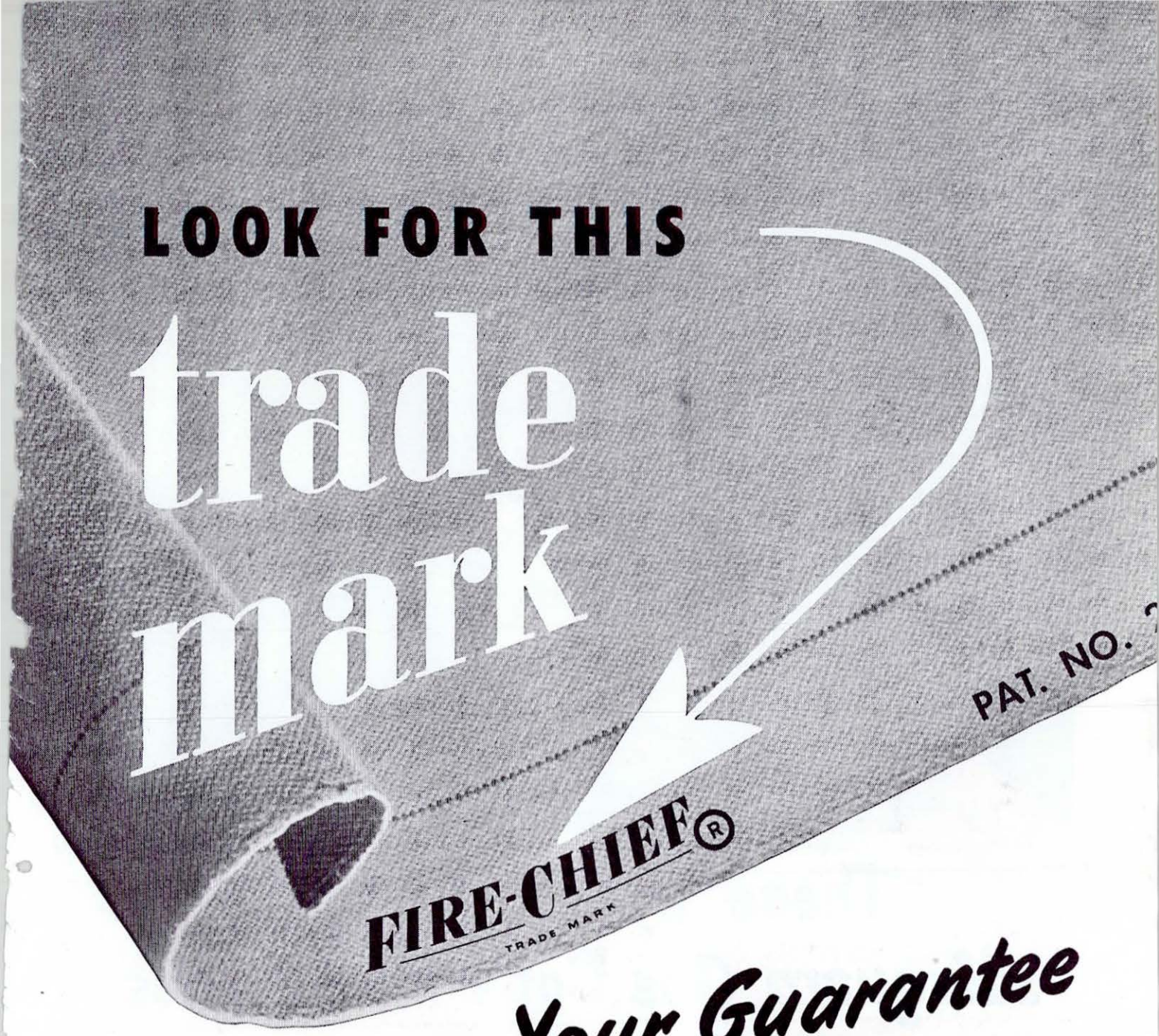
Keeping pace with railroad progress **Remington Rand** the FIRST name in business systems



Your Guarantee

OF A CANVAS RESISTANT TO FIRE, WATER, WEATHER AND MILDEW

FIRE-CHIEF® Canvas, manufactured by William E. Hooper & Sons Company, always carries the above trade mark on the selvage. Look for it. It is your guarantee of a *permanent, quality* finish.

FIRE-CHIEF® PRODUCTS are manufactured under U. S. Patents No. 2,044,167, No. 2,299,612 and other patents, all owned by William E. Hooper & Sons Co.

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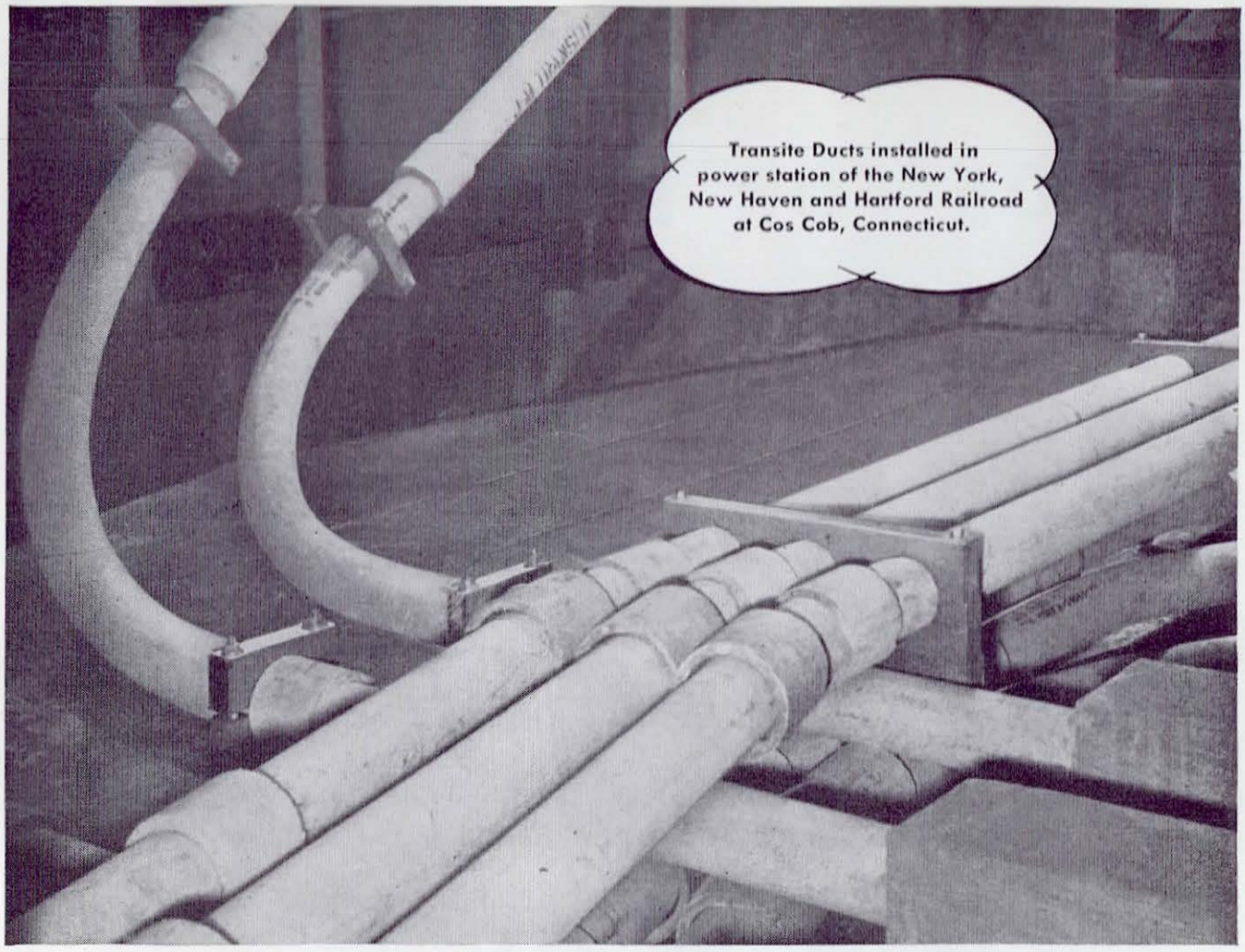

These Transite Ducts safeguard Cos Cob's Power Lines

Transite* Ducts were chosen for the important job of protecting the power lines in the New Haven's Central Power Station at Cos Cob because they meet every requirement of a low-cost efficient cableway system.

These asbestos-cement ducts provide 5 major advantages:

1. Easy to Install—Transite Ducts are light in weight and come in long 10-foot lengths that are easy and economical to assemble and install.
2. Strong, Corrosion-Resistant—Transite is made of asbestos and cement combined under great pressure into a permanently strong structure. These ducts are practically unaffected by corrosive soils.
3. Immune to Electrolysis—Entirely inorganic and non-metallic, Transite Ducts are immune to electrolytic or galvanic action.
4. Permanently Smooth Bore—Long cable pulls and replacements are easy with Transite Ducts. Their smooth bore minimizes damage to cables.
5. Incombustible—Transite Ducts confine burnouts, protect adjacent cables in case of fire.

Reg. U. S. Pat. Off.

For further information on how Transite Ducts can increase the safety and cut the costs of cableway systems, write Johns-Manville, Box 290, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE DUCTS

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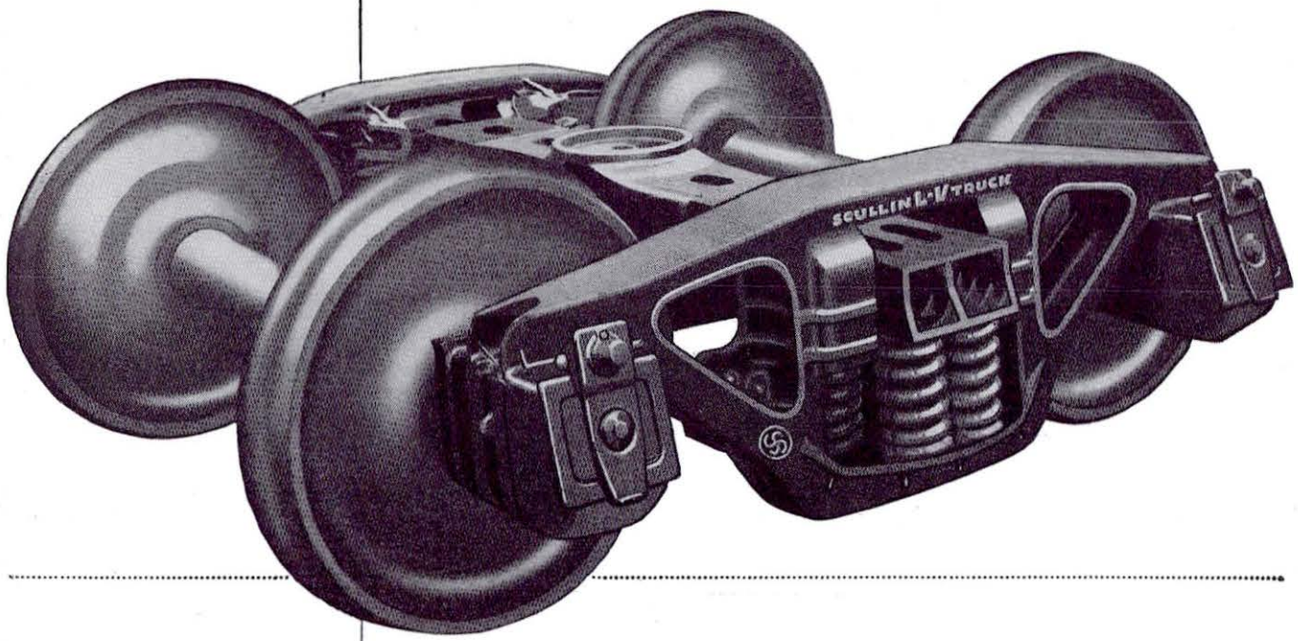
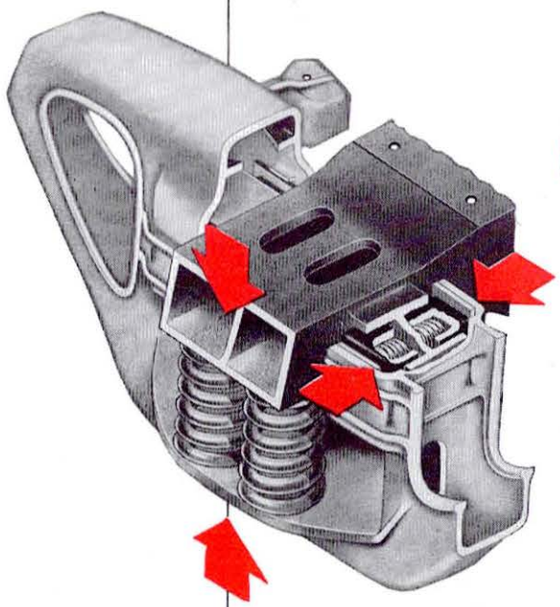
THIS IS THE SCULLIN L-V TRUCK

LATERAL VERTICAL L-V CUSHIONED MOTION





AND THIS IS HOW

it completely cushions *both* lateral and vertical motion... makes high speed freight *safe* for lading, cars and track.

STEEL CASTING MANUFACTURERS SINCE 1899

SCULLIN STEEL CO.

SAINT LOUIS 10, MISSOURI

NEW YORK • CHICAGO • CLEVELAND • BALTIMORE • RICHMOND, VA. • MEXICO CITY, D. F.

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DISTRIBUTORS: I
Electric Compa
FOUNDLAND—N

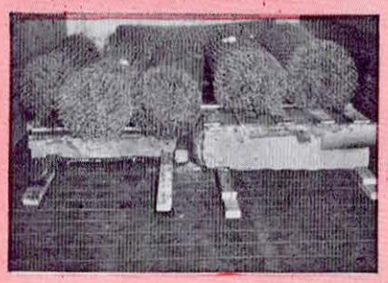
How Long do Boxcar Floors Last?

. . . That depends on the type of service they get—and the kind of floors they are. Regardless of the service . . .

Nailable Steel Flooring* will last longer

Fork Lift Trucks are constantly breaking through wood floors now. The trend in freight handling is towards *more* and *heavier* palletized unit loads—and *more* and *heavier* trucks to handle them. There's a way to meet this trend and stop floor damage. Fork trucks *don't* break through NAILABLE STEEL FLOORING.

Nails—can't tear or splinter NAILABLE STEEL FLOORING, can't damage it in any way. Nails are held tighter in the grooves than in wood—and the *nails* are deformed, *not* the flooring.



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*PATENTS PENDING

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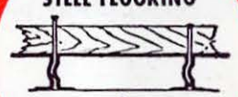
NAILABLE STEEL FLOORING



A GREAT LAKES STEEL PRODUCT

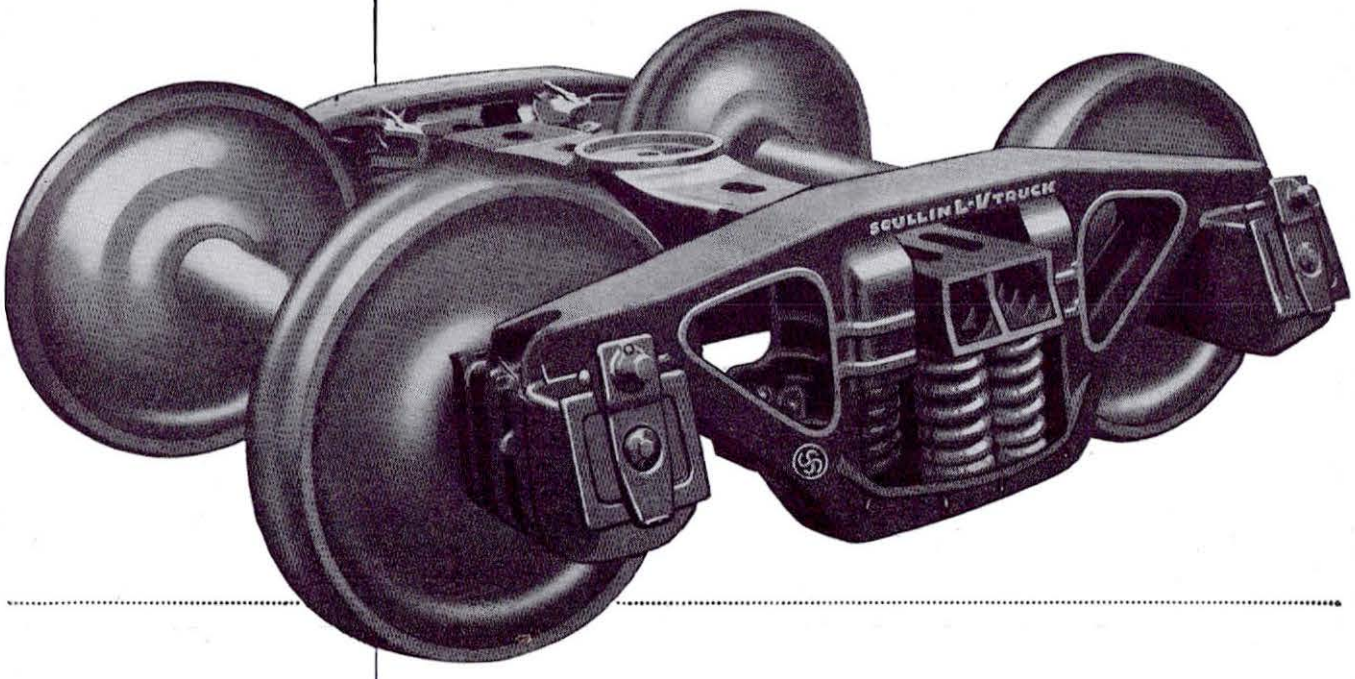
GREAT LAKES STEEL CORPORATION

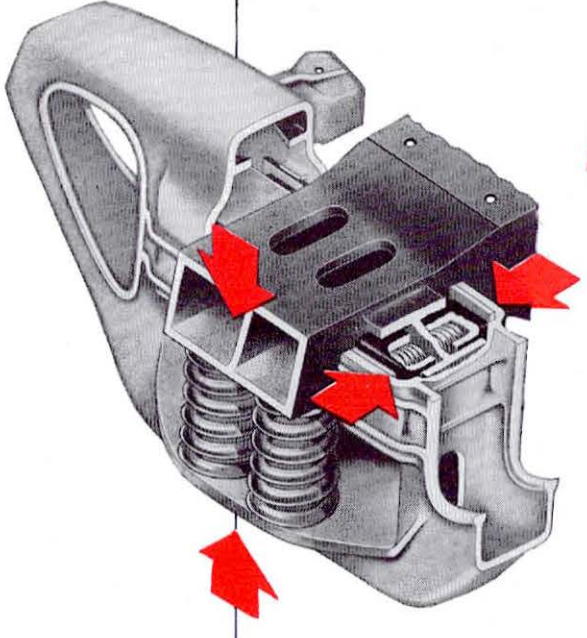
Steel Floor Division • Penobscot Building • Detroit 26, Michigan

UNIT OF NATIONAL STEEL CORPORATION

THIS IS THE SCULLIN L-V TRUCK

LATERAL VERTICAL L-V CUSHIONED MOTION





AND THIS IS HOW

it completely cushions *both* lateral and vertical motion... makes high speed freight *safe* for lading, cars and track.

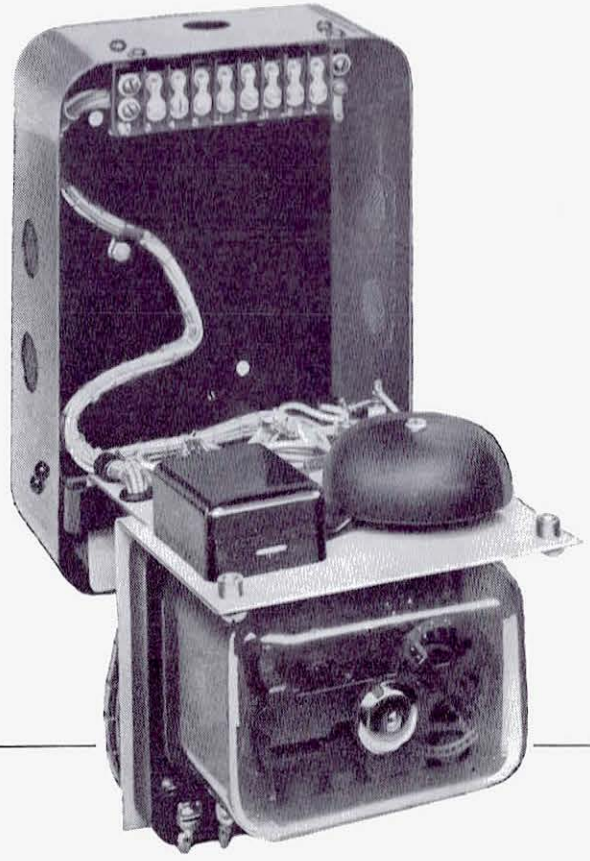
STEEL CASTING MANUFACTURERS SINCE 1899

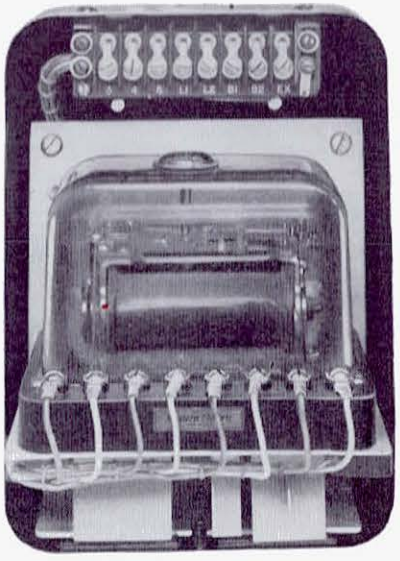
SCULLIN STEEL CO.

SAINT LOUIS 10, MISSOURI

NEW YORK • CHICAGO • CLEVELAND • BALTIMORE • RICHMOND, VA. • MEXICO CITY, D. F.

2 *NEW* Western Electric Selector Sets





162S SELECTOR SET
equipped with a 60BP Selector. The 162T Set is similar in appearance. (Left) Hinge permits easy access to rear of equipment.

for railway train dispatching telephone systems

The new Western Electric 162 Type Selector Sets equipped with 60 Type Selectors provide a reliable means for calling any one of a large number of way stations on the same telephone line without producing a signal at the other stations.

The 162T set is for use on repeating coil circuits requiring no condenser. The 162S set is for use on standard circuits and includes a condenser in series with the selector.

The apparatus panel in each of these new sets is hinged, permitting easy access to the rear of the equipment without disconnecting any wires and without taking the set out of service.

The case for the new 162 Type Sets has been designed with screened openings to protect against insects and still provide clear, uniform ringing of the bell.

Two selectors are available for use with the 162 Type Sets . . . the 60AP with a single selective ringing terminal, and the 60BP with four terminals. Each selector has enough different code settings to handle selective calls to as many as 378 telephones on the same line.

Complete literature on 162 Type Selector Sets is available from the Graybar office nearest to you, or from Graybar Electric Company, 420 Lexington Avenue, New York 17, N. Y.

Distributed by Graybar — Offices in 100 Principal Cities

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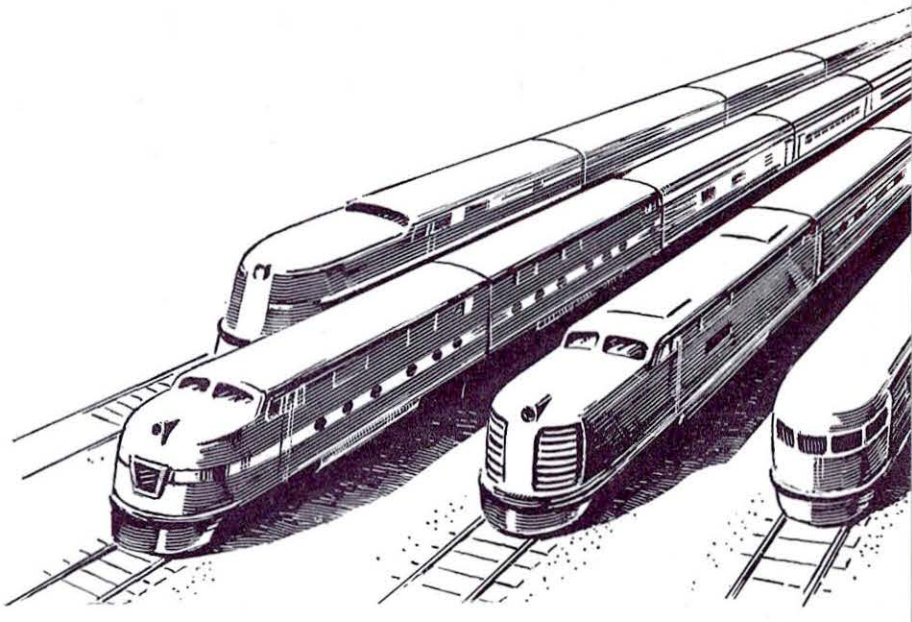
Western Electric

— QUALITY COUNTS —

Coming



PASSENGER PROGRESS NUMBER
November 20, 1948

What's new in railway passenger service?

Plenty—new cars, new motive power, new facilities—and a lot of tough new problems!

What the railways are doing to solve these problems — how they are using their new passenger equipment—what's ahead in railway passenger service—will be the theme of the November 20 *Railway Age*, the annual Passenger Progress Number.

Copies of this reference issue will carry the story of railway passenger progress not only to railway executives and operating officers but to inter-line ticket agents in United States and Canada, and to many other interested persons in government and industry.

. . . And both railroads and manufacturers advertise in this issue. Manufacturers' products are a basic part of the epic of passenger service—and an impressive number of railroads use the pages of this issue to tell their own passenger progress story.

Manufacturers have an unusual opportunity here to link their product story with modern railway passenger service. It's not too soon to start planning *your* advertising pages now.

RAILWAY AGE

How Long do Boxcar Floors Last?

. . . That depends on the type of service they get—and the kind of floors they are. Regardless of the service . . .

Nailable Steel Flooring* will last longer

Fork Lift Trucks are constantly breaking through wood floors now. The trend in freight handling is towards *more* and *heavier* palletized unit loads—and *more* and *heavier* trucks to handle them. There's a way to meet this trend and stop floor damage. Fork trucks *don't* break through NAILABLE STEEL FLOORING.

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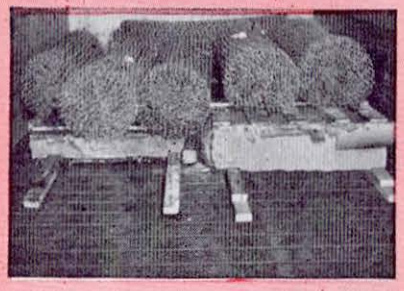

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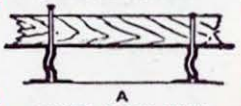

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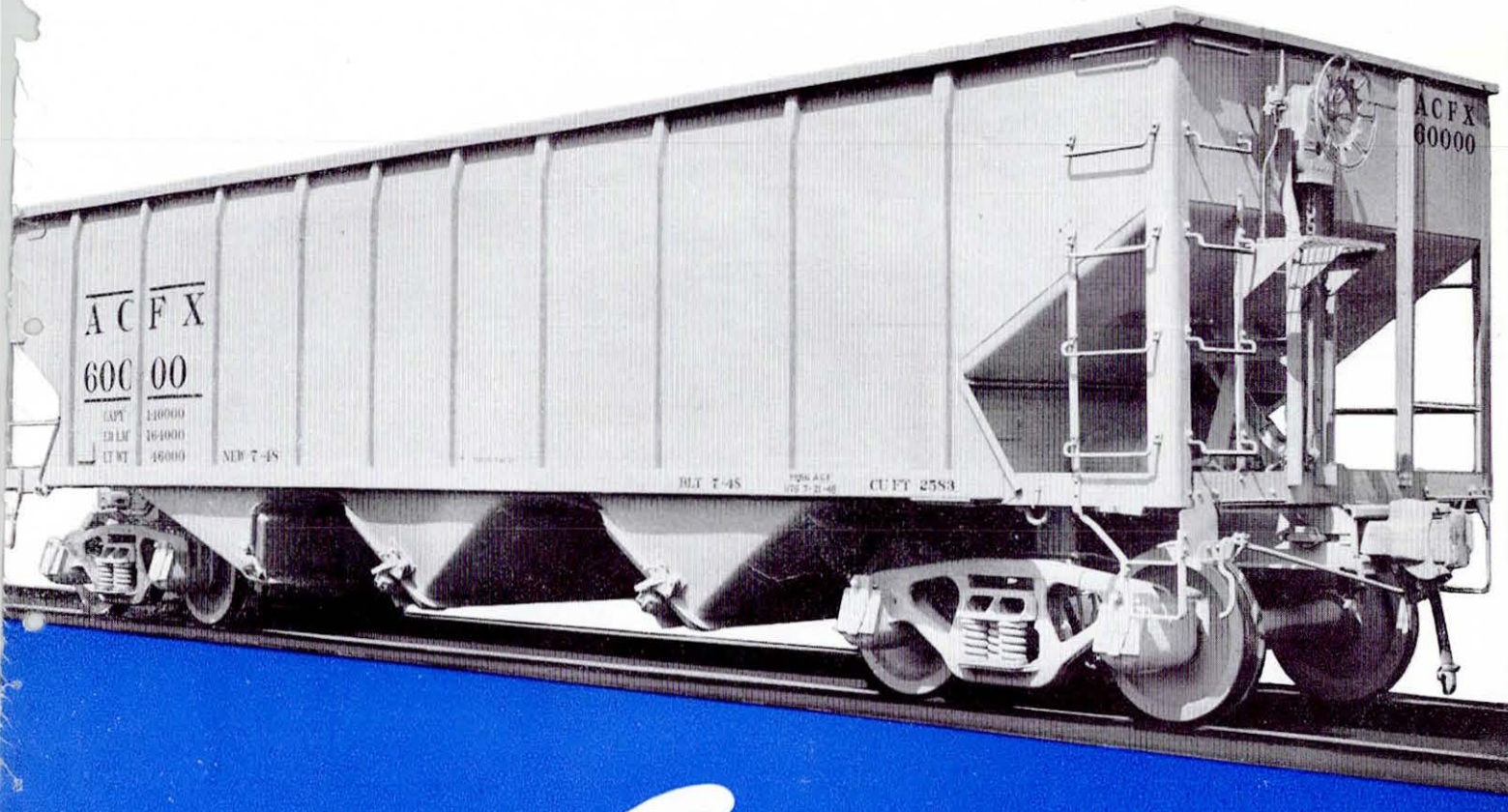
a.c.f.

Standardized

ALL-WELDED HOPPER CARS

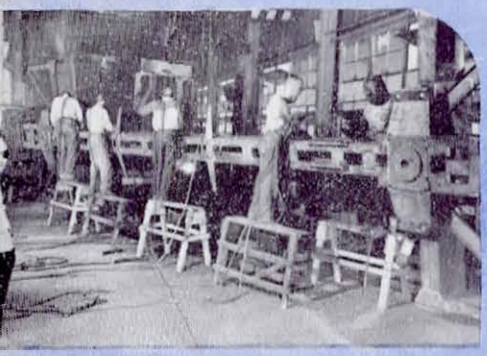


FOR OVERALL *Economy*

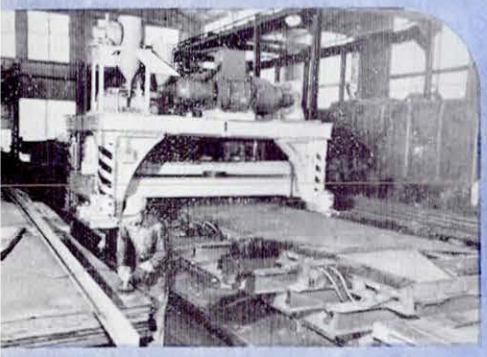
Standardized

HIGH-SPEED MANUFACTURE

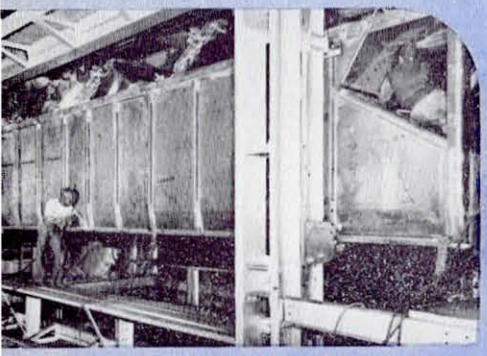
Channel-shaped beams are welded to form the center sill, draft sills are Z-sections welded to the center sill.



Center sill assembly of welded single-length channel beams and Z-section draft sills is rotated to facilitate high-strength welding.



Specially-designed machines automatically weld precision jig-locked side sections.



Huge rotators turn complete car to 7th, 8th and 9th positions for desirable "down-hand" welding throughout.

25% LONGER LIFE EXPECTANCY

Several years extra service before major repair

NO CREVICES TO CORRODE

Welding seals every seam tight against moisture

a.c.f.

CAR BUILDERS

FASTER DUMPING THAN EVER BEFORE
Extra large discharge openings. Rounded Corners.

★ **WEIGHT SAVING**
3000 to 4000 pounds per car . . . up to 250 tons per train.

★ **MAXIMUM STRUCTURAL RIGIDITY**
Side posts and side sills (all outside) edge-welded to give tubular section strength. Box section cross braces, inside. All exterior members flush to accommodate dumping machines. Unit-welded structure to resist strains of "shake-out" vibrators.

★ **BALANCED STRENGTH**
Design-engineered to eliminate overlapping seams and all other non-needed weight. Tested to prove high factor of safety against operating stresses at all points.

★ **EASE OF REPAIR**
Flame cutting and welding can be efficiently and easily utilized in shop repair.

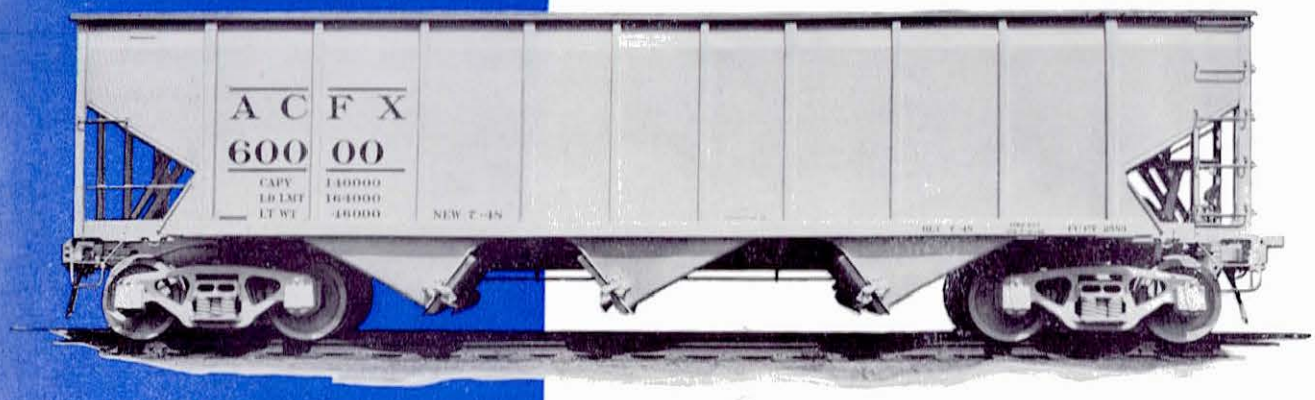
AN INTERIOR *Smooth* AS ONE-PIECE CONSTRUCTION

Welding alone makes possible a design for weight saving combined with an increase in structural strength. And only with huge special-purpose shop facilities, such as ACF plant equipment, is welding possible on a production-line-efficiency basis.

ACF welded design and standardized manufacture produces hopper cars of decided overall economy. It provides definitely better cars...of better structural integrity...better from an operating point of view...better from a maintenance viewpoint...superior in life-time ton-miles of service.

American Car and Foundry Company, New York • Chicago • St. Louis • Cleveland • Philadelphia • Washington • Pittsburgh • San Francisco.

TO AMERICA'S RAILROADS



a.c.f.

Standardized
ALL-WELDED HOPPER CARS

Specifications

	50 TON	70 TON
Length inside	35′ 0″	42′ 5″
Length over strikers	35′ 11¾″	43′ 4¾″
Width inside	9′ 11¾″	9′ 11¾″
Height rail to top of car body	10′ 8″	10′ 8″
Distance center to center at trucks	26′ 0″	33′ 5″
Truck wheel base	5′ 6″	5′ 8″
Capacity—cu. ft. level full	2195	2789
Capacity—cu. ft. 10″ heap	2474	3123
Body Weight—lbs.	24855	29400
Truck Weight per car—lbs.	15500	18400
Light Weight Average—lbs.	40355	47800

a.c.f.

CAR BUILDERS TO AMERICA'S RAILROADS

Streamlined, Lightweight

SIMPLEX UNIT CLYINDER CLASP BRAKES

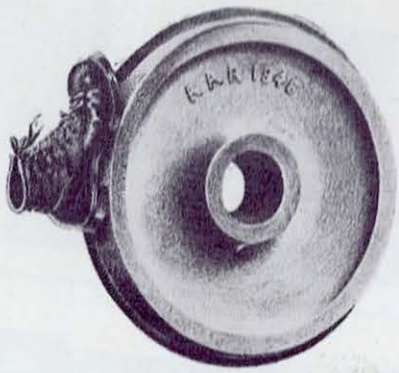
THE TEXAS EAGLE joined Missouri Pacific's streamlined, Diesel-powered Eagle Fleet on August 15, providing new and *speedier* schedules to and from the principal cities of Texas. Operating in two sections, every day, this de luxe train required the purchase of 69 *new passenger cars*—coaches, dining cars, diner-lounge, and sleeping cars. All are equipped with *smooth-stopping* A. S. F. Simplex Unit Cylinder Clasp Brakes.

AMERICAN STEEL FOUNDRIES

MINT-MARK OF ○ FINE CAST STEEL

"Brake Shoe research serves you today and anticipates tomorrow"

Wm. B. Given, Jr., President



"Shoeing" the Iron Horse

Every railroad car wears at least four pairs of "shoes." Not the kind of shoes *you* wear, of course, but heavy-duty brake shoes, upon which depend the safety and efficiency of every train that rolls.

These rugged cast-iron shoes will never actually be called upon to clamp down on train wheels speeding at 160 miles per hour. But in the testing laboratories where Association of American Railroad standards are set, they must prove they're tough enough to do just that.

Yes, and every brake shoe must fit in any brake assembly built by any brake manufacturer, so that it can be readily replaced at any railroad shop or terminal.

Fixing the requirements for such a commonplace item of equipment is just one example of the testing and development activities which railroads carry on through the Association of American Railroads, their mutual agency for the improvement of *all* railroading. Comparable standards are also set for other interchangeable parts, such as wheels, axles, trucks, draft gear, and safety devices.

This is part of the cooperative effort by which railroads, while competing with one another for business, make sure that every piece of their equipment meets strict specifications for strength, safety, and convenience.

It is this kind of cooperation for progress which helps provide America with the most economical, the safest, the most efficient mass transportation system in the world.

ASSOCIATION OF AMERICAN RAILROADS

WASHINGTON 6, D. C.

954
28

"Shoemakers" of the Iron Horse

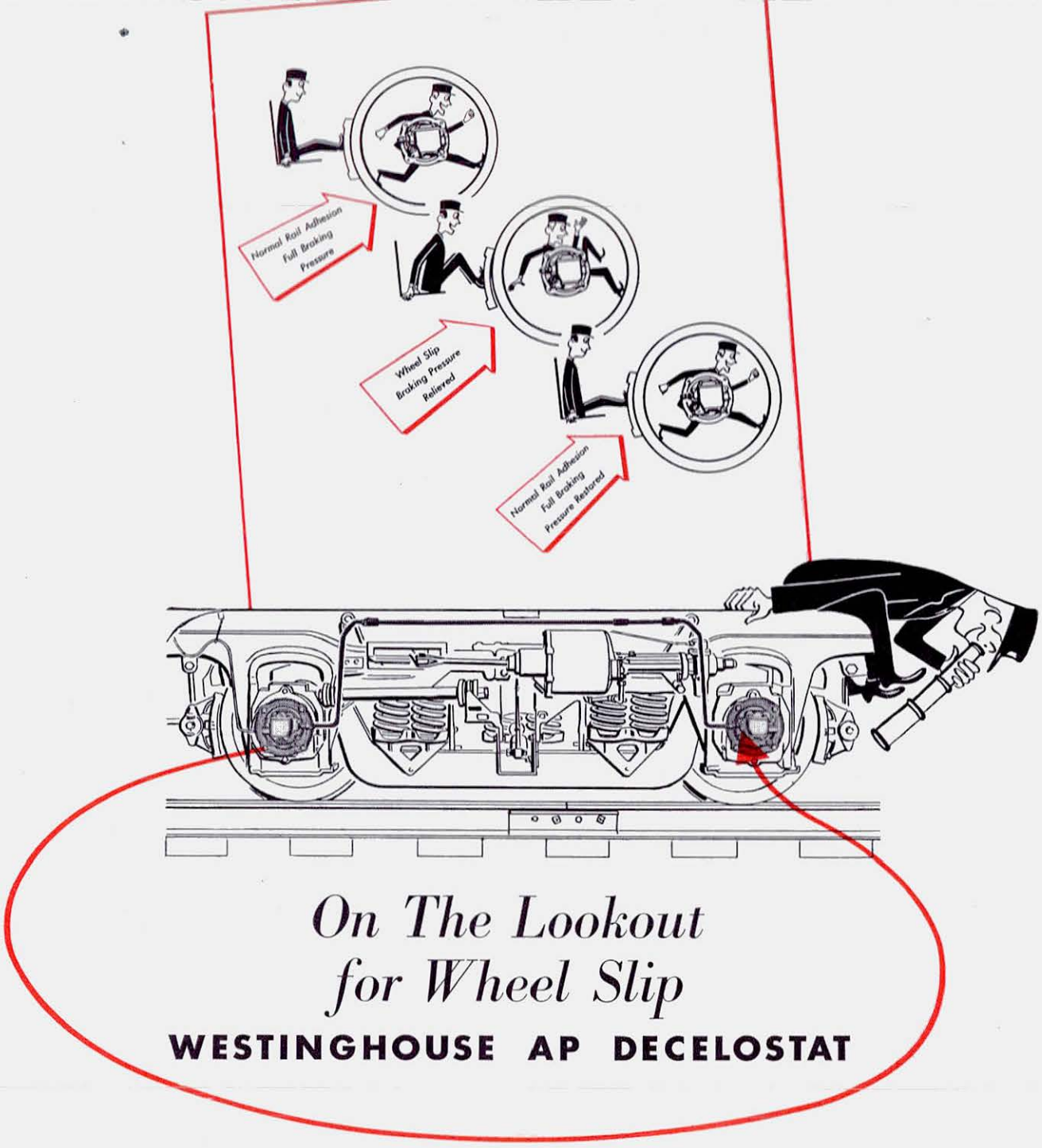
We at American Brake Shoe Company are proud to echo the sentiments of the AAR in its message shown at the left.

We wish to add a tribute of our own and salute the solid achievements of the railroads during 1947 . . . 18,126 tons of freight hauled per freight train mile . . . 189 million express shipments . . . 426,000,000 lbs. of first class mail . . . 320 miles of travel for each man, woman and child in the entire country.

The size of the job done by the railroads does not indicate the full measure of their importance as the basic carrier from coast to coast. Their all-season, all-weather reliability makes railroads essential to farmers, to manufacturers and to industry. American Brake Shoe Company, 230 Park Ave., New York 17, N. Y.

AMERICAN Brake Shoe COMPANY

BRAKE SHOE AND CASTINGS DIVISION



On The Lookout for Wheel Slip

WESTINGHOUSE AP DECELOSTAT

Around the clock and around the year, Westinghouse AP Mechanical Decelostats maintain a continuous watch for wheel slip on passenger trains.

At the first hint of a slip, the Decelostat momentarily relieves braking pressure, permitting wheels to regain train speed—and then braking pressure is immediately restored to train level.

The Westinghouse AP Mechanical-pneumatic Decelostat is simple, rugged and positive in action. All equipment is located on the truck, requiring no additional connections to car body—this permits free interchange of trucks, yet retains complete wheel slip protection.

You will find the complete story in Bulletin DL2461-1. We will gladly send you a copy.

Brakes are Basic to Railroad Progress

Westinghouse Air Brake Co.

WILMERDING, PA.

Vol. 125, No. 14 October 2, 1948

RAILWAY AGE

With which are incorporated the Railway Review, the Railway Gazette, and the Railway-Age Gazette. Name Registered in U. S. Patent Office.

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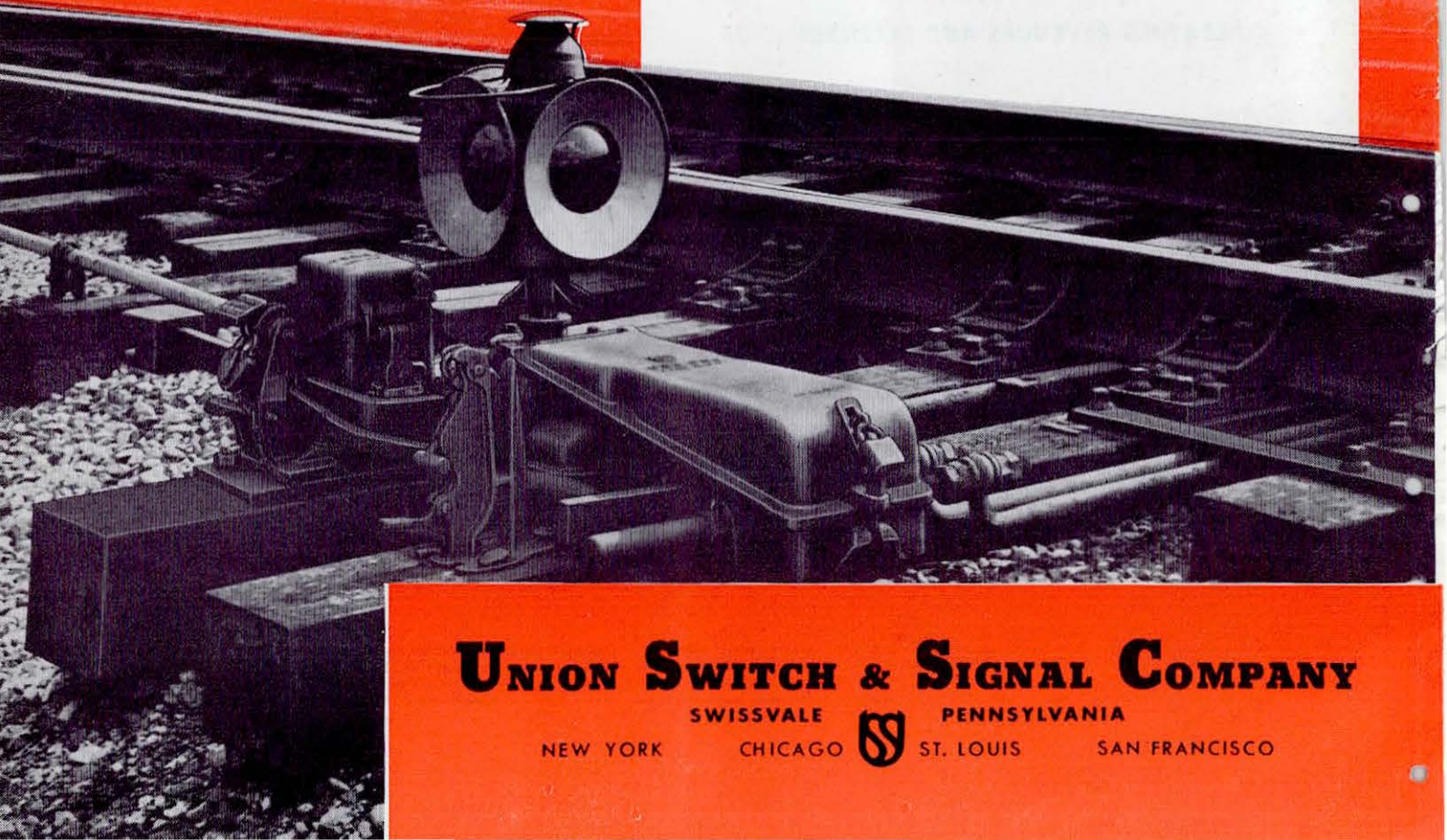
MODERNIZE Your Switches WITH "UNION"

Switch Stands

"Union" T-20 and T-21 Switch Stands are unsurpassed for main line service . . . may be used with any weight of rail. Their roller-mounted rack and escapement crank mechanism makes it possible to operate the heaviest switch points with minimum effort . . . positively holds the operating rod at the end of the stroke for either the normal or reverse position of the switch.

And for *maximum* safety, their design incorporates in the one mechanism facilities for locking a standard lock rod when points are normally positioned and, by means of a point detector and built-in circuit controller for signal control, checking that (1) the lock rod is actually locked, and that (2) the points are properly positioned.

Remember . . . these safety features provide protection equivalent to that of interlocked switches. For full details, write to any of our district offices.



UNION SWITCH & SIGNAL COMPANY

SWISSVALE PENNSYLVANIA

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

WEEK AT A GLANCE

BETTER FACILITIES FOR IMPROVING OPERATION: A striking example of the manner in which wise capital investment for improved facilities produces more efficient and economical operation is given in our story on the Nickel Plate, beginning on page 46. Heavier rail; modern and largely-standardized motive power carefully maintained; and improved signaling, including a large mileage of centralized traffic control, are some of the factors which have enabled this road to make enviable records for gross ton-miles per freight train-hour, train speed, daily freight locomotive mileage and other factors which help to reduce costs and attract traffic.

A RAILROAD FAIR IN 1949?: Sunday, October 3, marks the end of the strikingly successful Chicago Railroad Fair—an event which *Railway Age* definitely believes should be reopened, though possibly with a few minor changes, in 1949. An editorial on page 36 gives our reasons for advocating renewal of the event next year, and also presents some suggestions which we believe would help to make it even bigger and better.

KEEPING 'EM CLEAN: The advent of Vista Dome cars, with the necessity for keeping dome windows and car roofs, as well as car sides and car windows, thoroughly washed at minimum expense and in the shortest possible time, has lead the Chicago, Burlington & Quincy to install a Whiting tandem car-washing machine at Chicago. The new installation, which will soon be matched by another at Denver, Colo., is fully described in an illustrated article on pages 38-41 of this issue.

CUTS FREIGHT HANDLING TIME: Complete mechanization of freight handling at its New Jersey export piers has enabled the Delaware, Lackawanna & Western to increase by 44 per cent the average tons of freight handled per man per hour, as compared with two and one-half years ago. As explained in an article beginning on page 59, the complete elimination of hand trucking and use of take-it-or-leave-it pallets and Towmotor fork lift trucks equipped with pusher devices has produced a substantial reduction in man-hours.

HIGHER AND HIGHER: Another general increase of eight per cent, applicable to all freight (with a few specified exceptions), and to switching and accessorial charges, will be sought by the railroads in a petition to be filed with the Interstate Commerce Commission this week. The proposed increase, our news story on it states, is estimated to produce $672,500,000 of additional revenue on the basis of anticipated 1949 traffic. The requested increase is based on present needs, and does not take into account further increases in wages which may result from pending union demands or from possible further increases in other costs. In connection with the proposed increase, it is significant that another of our news stories reports that freight rates have *not increased* as fast as commodity prices, so that transportation represents a decreasing proportion of total commodity values.

A BIGGER THREAT THAN EVER: Recent advances in railroad rates—however justified by higher wage and material costs—combined with continued torrential dissipation of public funds on toll-free highways and waterways, present an immediate and inescapable threat to continued private ownership of railroads. Our leading editorial points out that protagonists of socialized transportation, and the business leaders who tolerate and selfishly support them, are undermining the political foundation of private-enterprise principles for all business, including their own. The same editorial urges railroads to take active leadership in calling attention to the situation and in urging adoption of specific measures to correct it.

NO TAX-FREE AIR "COMMUTATION": As reported in our news pages, the Bureau of Internal Revenue, reversing an earlier ruling, has now decided that air lines cannot help their potential customers avoid payment of the 15 per cent federal transportation tax by the expedient of selling certain types of commutation tickets.

ROADMASTERS MEET AT CHICAGO: Continuing the series of September and October railroad conventions, the Roadmasters' and Maintenance of Way Association held its annual meeting at Chicago from September 20 to 22. The dominant theme of the meeting, which is reported in detail in an article beginning on page 51, was the constantly changing conditions confronting railroad maintenance-of-way supervisors, and the urgent necessity of keeping up with those changes.

MOTOR TEMPERATURES: There are times when operating conditions may require utilization of Diesel locomotives beyond their continuous normal ratings, provided such utilization does not cause motor or generator windings to exceed safe temperatures for too long a period. In an article beginning on page 42, J. W. Teker and F. H. Catlin of the General Electric Company outline a procedure for getting the most out of a Diesel without exceeding permissible temperatures.

NEW LIMA-HAMILTON DIESEL: A new Diesel engine, intended particularly for application to railroad motive power, but suitable also for other uses, has been introduced by Lima-Hamilton Corporation. As pointed out in a descriptive article beginning on page 57, the new engine is of the vertical, four-cycle type.

"The World's Largest Fabricator of Railway Car Specialties."

NEW DESIGN GIVES ADDED STRENGTH TO CAR ROOFS

Makes Freight Cars *"Twist-Resistant"*

Chicago, Ill., Oct. 2. Recent improvements in design announced by the Standard Railway Equip...

Standard's DIAGONAL PANEL ROOF

Today, after 50 years of continuous research, *Standard* has developed an entirely NEW roof which is "twist-resistant" as well as weatherproof, dustproof, lighter and *20% stronger for equal weight!*

For *lifetime* freight car protection, specify *Standard's* DIAGONAL PANEL ROOFS.

STANDARD RAILWAY EQUIPMENT MFG. CO.

310 South Michigan Ave., Chicago 4
247 Park Avenue, New York 17

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TOLL-FREE COMPETITION—A GREATER THREAT THAN EVER

Not many railroad people need to be informed that recent advances in railroad freight rates—plus the increasing availability of trucks and barges—have alarmingly accelerated the diversion of traffic away from the rails. There is not, meanwhile, the faintest hint of any let-up in the conditions which have forced the railroads to increase their rates or of any disposition on the part of the politicians to curtail their torrential dissipation of public funds in extending superhighways and waterways. This threat to the railroads is not remote and merely potential—it is immediate and inescapable, unless there should occur a sudden and revolutionary reform in the present national policy favoring the socialized part of transportation plant, or unless the outbreak of war should put an end to further political expenditures on transportation.

No Foresight or Intelligence

A chief railway executive, who is more than usually well informed on the traffic side of the business, recently remarked: "Except for the fact that there are not enough trucks and barges to accommodate the tonnage which wants to move in them, the railroads would be in the midst of a depression right now, with industrial production at an all-time peak." Unfortunately for the railroads, a shortage of trucks and barges is a condition which a very little time will cure—especially since it seems to be a great deal easier for the builders of such vehicles to secure the steel they want than it is to get steel for the construction of freight cars.

On the average—but with some notable exceptions—the railroad industry has displayed only moderate discernment and courage in detecting and combating the situation which now confronts it. At the same time, the industry's adversaries—that is, advocates of unlimited public spending on superhighways and waterways—have evidenced practically no foresight or intelligence at all in the course they have so far pursued; and in this fact lies the great hope that, late though the hour now is, private enterprise in transportation may still have a chance of being rescued.

Waterways and superhighways have become their present threat to the privately financed railroads, not from their relative economic merit, but solely because the manufacturers, operators, and users of the vehicles which ply these socialized thoroughfares have engaged in intensive and successful *political activity in behalf of socialist principles* in the financing of these facilities.

The lack of forethought in this line of action is demonstrated by the fact that, in carrying on propaganda for socialist principles in the financing of transportation facilities, protagonists of this course are inevitably undermining the political foundation

of private-enterprise principles for all business, their own included. They have failed to note or be warned by the fact that, when triumphant socialism took over the railways in Britain, it also absorbed highway and inland waterway operations. These protagonists of unlimited public spending for toll-free transportation plant have never had the educational benefit of an occasional set-back. Their appetite, having never suffered denial, grows ever more voracious. So long as neither the railroads nor industrial traffic interests feel inclined to point out to these people that their behavior makes them, in actual fact, partisans of Henry Wallace and disqualifies them for inclusion among the friends of private enterprise, their suicidal antics will doubtless continue to hasten the day of their downfall, accompanied by that of the free economy as a whole.

Poor Economics—Good Politics

A recent and typical report on taxation by a committee of truck operators is such a complete antithesis of all the political and economic canons of free enterprise that Old Marx himself could not have done a more thorough job. This committee opposed toll-road construction on the disingenuous contention that such roads constitute "double taxation" of the highway user. It objected to all payments for road use which are related directly to such use (e.g., ton-mile levies)—which is another way of saying that it wants highway costs to be socialized, i.e., spread over all taxpayers instead of being laid entirely upon direct beneficiaries. It asked for the repeal of all federal excise taxes on highway transportation, but not for the curtailment of federal appropriations for highway construction—which, being interpreted, means that this group insists upon a still further increase in the degree to which highway transportation costs are socialized.

Any tyro in economics could make mince-meat of these contentions. They have, however, proved so far to be good politics—but they would not be good politics if people who understand their malicious and dangerous absurdity would summon up the courage to "call" those who utter them. There are sanctimonious business leaders who tolerate and support such heretical inconsistencies by privilege-seeking lobbyists in their employ, and who, at the same time, insist that parallel political favoritism to farmers and organized labor be declared practically a capital crime. These business leaders could not afford to be pilloried for their socialism. They persist in it either because they are unaware of their untenable position, or are confident that no one is courageous enough to denounce them.

Nobody is going to pull the railroads out of the hole they are in unless they take the leadership by specifying what is needed to extricate them, and showing why it is of advantage to somebody besides themselves that they be extricated. Experience has demonstrated that half-hearted and pessimistic complaints about "subsidized competition" will not suffice—the problem is a specific one and only specific measures will solve it. There is not the remotest possibility that political leaders are going to interest themselves constructively in such a controversial issue, unless they are forced to do so. Sixteen years of Democratic administrations should be sufficient to convince even the most sanguine that no constructive leadership is to be expected in that quarter. As for Governor Dewey—no more need be observed of him than his advocacy of the St. Lawrence Seaway, and the fact that, when an investigation proved that a superhighway across New York State could not be fully financed by the levying of tolls, he concluded that no tolls at all should be collected; but that the superhighway should, nevertheless, be built.

A RAILROAD FAIR IN 1949?

Tomorrow, October 3, the Railroad Fair at Chicago comes to an end—not because the public has stopped crowding into its exhibits and shows, but because Chicago's lake front is growing too chilly. Whatever measurements are used, the fair was a capital success. It has undoubtedly won a large measure of public sympathy and understanding for railroads because it entertained and interested.

When this issue went to press, the railroads and Major L. R. Lohr, president of the fair corporation, had not decided whether the fair is to be presented in 1949. *Railway Age* believes that the answer should be "yes."

Holding the affair another year would have the following advantages:

(1) Railroads, supply manufacturers and others who did not participate in the 1948 fair because of lack of advance time for preparation, failure to get budget appropriations quickly enough, or simple faintness of heart, can add their strength and interest to a 1949 show.

(2) Opportunity will be given to the railroads to make the fair a national event. For this reason it is sugested that the name of next year's fete be "National Railroad Fair at Chicago" rather than the present "Chicago Railroad Fair."

(3) The carriers will have time in which to prepare special tours and trips to the fair. Since it was believed that the fair would attract only those who live in or near Chicago or who were already visiting there for some other purposes, the railroads generally did not this year consider the fair an opportunity to boost their passenger travel. But at least one railroad operated all-expense tours to

Chicago and the fair from points as far distant as 450 miles with substantial success. The findings of the fair corporation are that a large number of people went to Chicago by automobile and rail from out-of-town to attend the fair.

If the fair is operated next year, Major Lohr proposes to use the "formula" which proved so successful in 1948, but with new and important variations. What he terms "industry exhibits"—those which appeal to the trade but not to the public—have proved unsatisfactory and, he hopes, will not be repeated. He believes that it is possible for any railroad or supply industry to work out a presentation which will have high popular appeal.

Because of unexpected large attendance and extended duration, operating expenses have been more than met. With a joint capital expenditure of $1¼ million (at least a portion of which will be covered by receipts), the railroads have obtained for themselves an incalculable amount of publicity, interest, and public goodwill. Why not continue the process?

CAR CONDITIONS AND FREIGHT CLAIMS

The relation of freight car conditions to claim payments was quite thoroughly discussed at the annual meeting of the Car Department Officers' Association in Chicago on September 21. The importance of this matter, to higher railway officers as well as to car supervisors, is measured by the increase in loss and damage payments on Class I carriers from $94,300,672 in 1946 to $122,215,948 in 1947, or 29.6 per cent. Of the latter amount, $5,083,184, or 32 per cent more than in 1946, was said by one speaker to be the direct result of using unfit equipment. With increased unit prices for practically all materials handled and the urgent need to keep shippers satisfied so they will continue to use railroad service, more intensive efforts in furnishing the best cars practicable for loading are plainly required.

Improved general car maintenance, more care in the selection of cars for commodity loading, and elimination of unnecessary delays at repair tracks were mentioned during the meeting as some of the more important contributions car men can make to reduce loss and damage payments. With constant emphasis on these three objectives, prompt checking of reported failures and the taking of remedial action, service to shippers can be substantially improved and railway net earnings increased.

Not all instances of the placement of cars unfit for loading can be justly charged against railroads, as the present great demand for cars frequently results in their being unloaded and spotted for reloading at the same or a nearby point with no opportunity for inspection by qualified car men. In such cases, shippers have a definite responsibility to see that the cars they release are in condition acceptable to them for loading.

Shippers' cooperation with railroads in efficient car use was excellent and in some instances phenomenal during the war. Why cannot this cooperation and habit of working together with due consideration for the other fellow's problems be continued through the postwar period? In general, it is, and every effort should be made to eliminate, or at least reduce, the exceptional cases where failure to see eye to eye and take appropriate action results in the loading of unfit cars, attendant delays, poor service and unnecessary cost both to shippers and railroads.

NEW TECHNIQUES AT DERAILMENTS

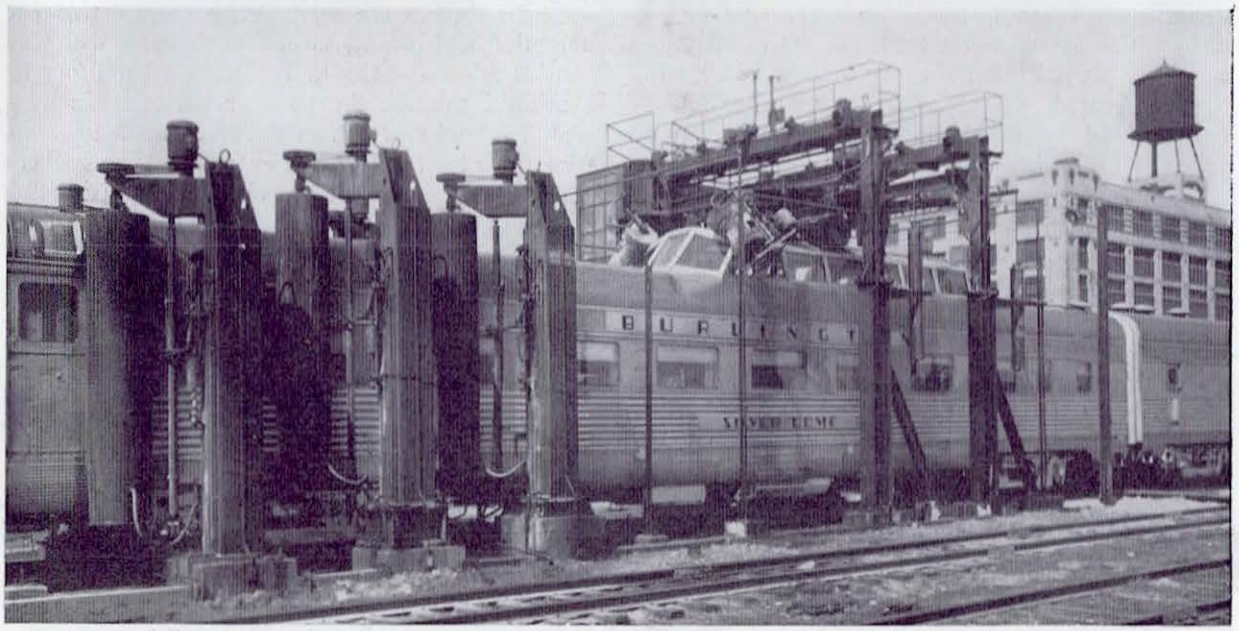
The wrecking crane is still "king" at train derailments and some other emergencies on the railroads, but it is being forced on some roads to share honors with a large amount of other equipment, including bulldozers, highway truck cranes, rail-laying cranes, highway trucks, and portable lighting outfits, which combine to facilitate clearing and track-rebuilding operations at a speed beyond anything possible a few years ago. Latest of the additions to wrecking equipment are loud-speaker systems which, according to those who have used them, are helping to coordinate the efforts of forces involved, accelerating operations, and reducing accident hazards.

Asked recently whether loud-speakers can be used effectively at derailments and other emergencies, four railway officers, all with experience with these units, chorused an emphatic "yes." Among the uses listed were: directing the operations of the derrick operator; instructing employees on the ground in the work to be done; conversing with linemen on poles; warning men of approaching trains or other operations affecting their safety; and paging officers wanted on field telephones.

Obviously, the need for and effectiveness of loud-speakers at emergencies depend upon the character of the emergency and the operations involved, but if they do no more than help coordinate the efforts of forces under the conditions of excitement and stress which usually prevail, and increase the safety of operations, they would appear to warrant a place in every large wrecking outfit. For similar reasons, such equipment might well be found effective on many construction and maintenance jobs, e.g., bridge work, where heavy lifting operations and train movements are involved.

BURLINGTON PASSENGER-CAR ROOFS CLEANED MECHANICALLY

Overhead brush application on Whiting car washer permits quick cleaning of roofs, including the Vista Domes



Train passing through Whiting side- and roof-washing machine at Chicago

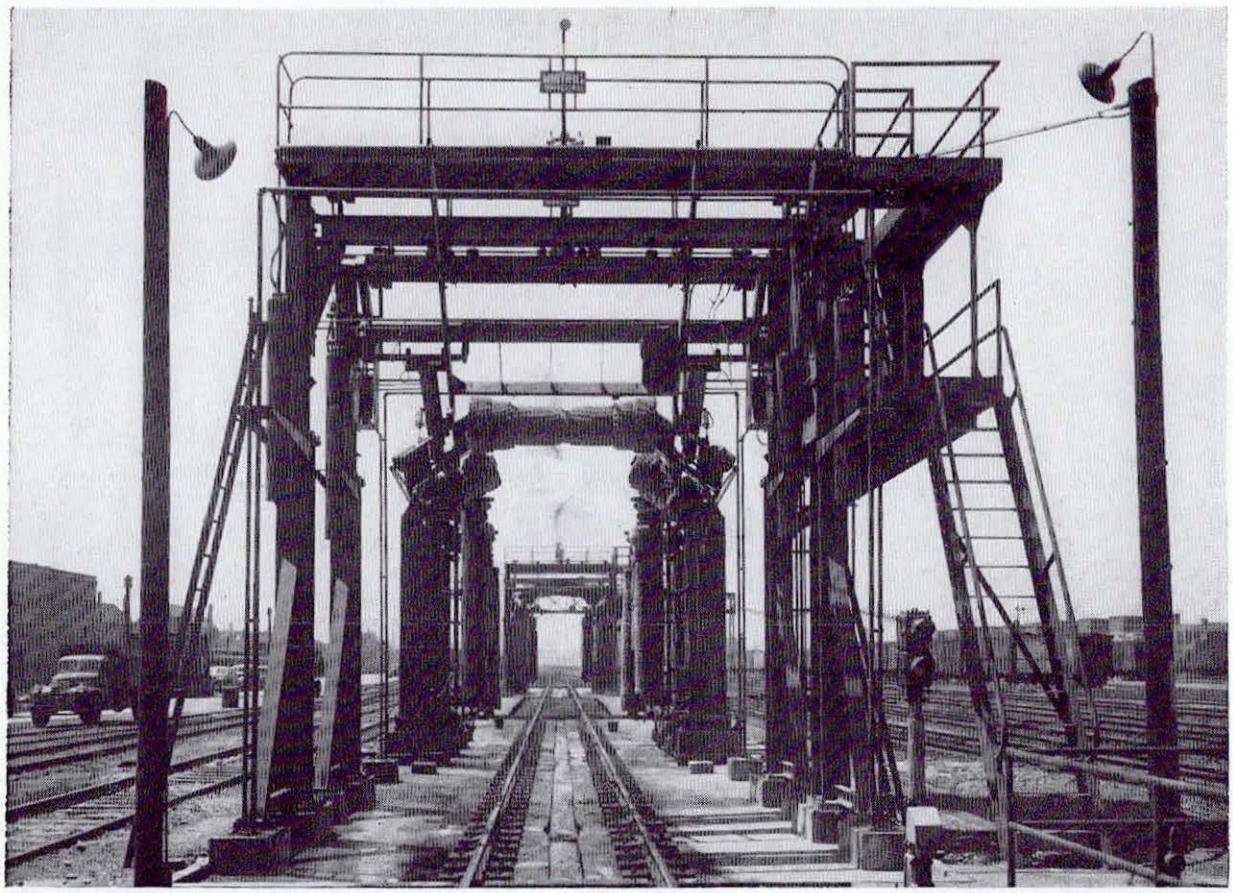
The Chicago, Burlington & Quincy has recently installed at Chicago and will soon have in service at Denver, Colo., a Whiting tandem car-washing machine, each unit of which has been equipped with a three-brush roof washer designed to clean streamline passenger-car roofs, including the Vista Domes. This development was brought about by the advent of dome cars and resultant need for keeping the domes, dome windows and car roofs, as well as car sides and side windows, thoroughly washed at minimum expense and performing the work in the short turn-around time usually available.

Train No. 22, the "Morning Zephyr" from Minneapolis, Minn., for example usually has seven cars including four new Vista Dome coaches and a Vista Dome parlor car. It is due in Chicago at 2:40 p.m. central standard time. This modern stainless-steel train is scheduled out on the return trip at 4:00 p.m. which allows a maximum of only 80 min. for all servicing, cleaning and switching operations. Considering that this and other Burlington streamline trains have to be inspected in the yard, checked by electricians, refueled, and watered, diner supplied and all cars cleaned inside, the time available for exterior cleaning is definitely limited. Another consideration is the difficulty of getting an adequate force of car cleaners for this major operation under present labor conditions in a large industrial center.

With the Whiting car washer and roof-washing attachment, the domes, roofs and car sides are washed in a single pass through the machine at the rate of about 1½ min. per 85-ft. car, or 22 min. for a 15-car train. A four-man crew is used on each of two 8-hr. shifts. At present, 100 to 150 cars a day are washed in the machine, but it is expected that this output will be stepped up shortly to 155 main-line cars and 56 suburban cars, or 211 cars a day. Major advantages secured with the mechanical car washer are difficult to evaluate. They include: more favorable public reaction to clean cars, reduced cleaning time and hence shorter turn-arounds, and cleaner and dryer conditions by removal of the car-washing operation from train yards where all other servicing must be done.

Burlington streamline trains are normally washed every day. This practice lightens individual cleaning operations and permits using clear water except on occasional dirty cars when a one-half strength or full-strength cleaning solution is used in the leading washer unit. Diesel road-locomotive front ends and front windows are automatically sprayed and hand brushed. The locomotive bodies pass through the washer with side brushes in operation and roof brushes retracted. For steam locomotives and Diesel switchers, all brushes are retracted.

The Whiting tandem car washer units are spaced about 150 ft. apart and all water and solution sprays, as well as two long side brushes and one short window brush on each side of each unit, are operated by one



Looking through the tandem car washing units

man from a single control house just ahead of the lead washer. The roof brushes, however, require one man at a control station high enough on each unit to watch the brushes pass automatically along the car roofs and over the domes, but raise them by pneumatic control whenever projections like ventilators or radio antennas come along. Two operators are normally required, therefore, for operation of the tandem washer with roof-cleaning attachment. In addition, a car cleaner with a long-handle brush stands on each side of the lead washer unit as the train passes and manually scrubs the locomotive front end, vestibule doors, truck skirting, observation end and other parts inaccessible to the brushes.

The car washer is located on a suitable section of straight spur track just west of the Twelfth street, Chicago, yard where passenger trains are normally serviced. The trains are turned on a wye and pulled or pushed westward through the car washer, at present arranged for one-direction washing, by either Diesel or steam locomotives. On completion of the washing, trains proceed into the coach yard or Union Station, as the case may be, without an extra movement which would involve additional delay and switching expense.

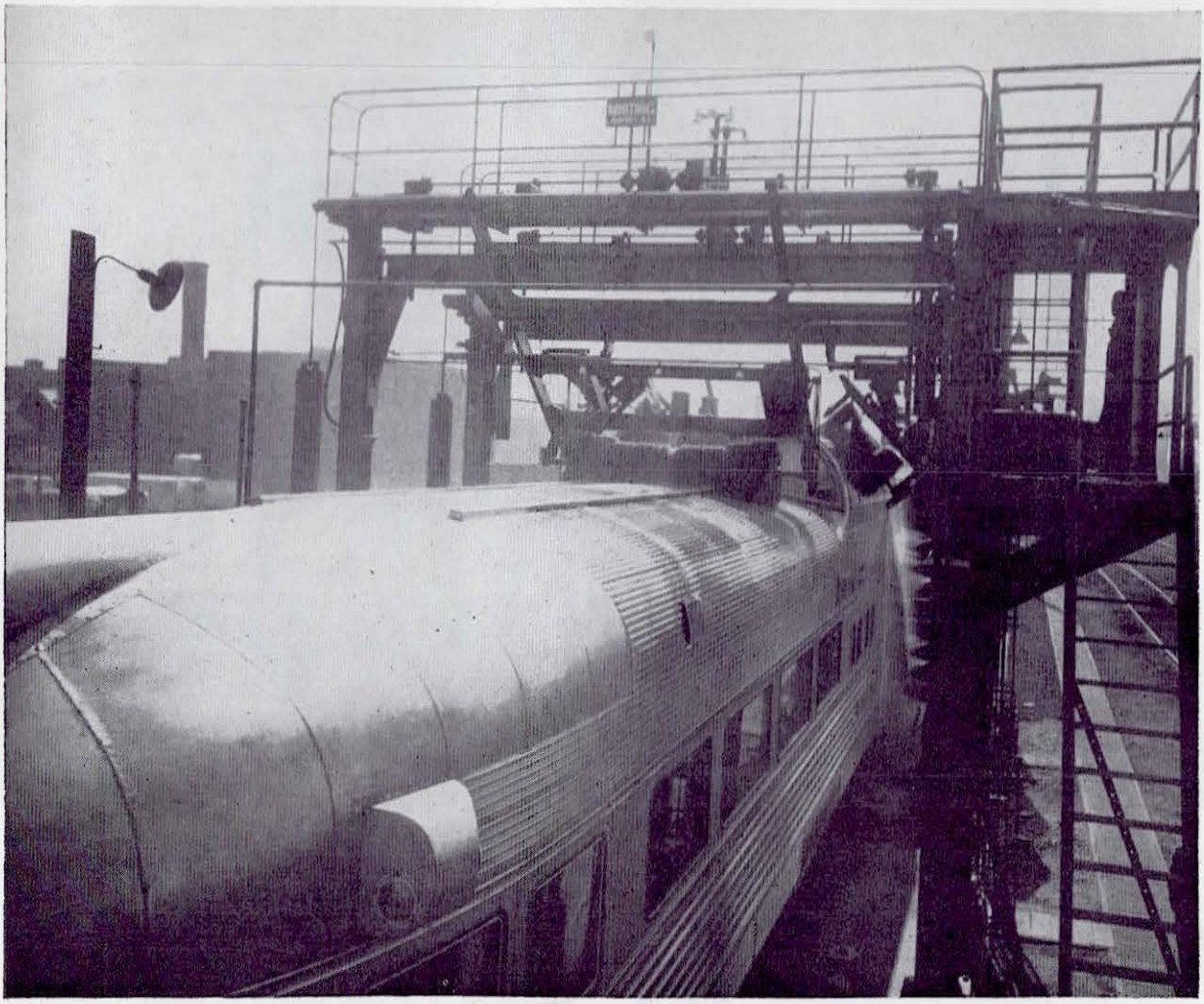
The six-brush side-washing machine, which is the basis of the new installation on the Burlington, is standard Whiting equipment with steel beam supports for side and window brushes mounted in self-alining roller bearings in pivoted arms which are moved towards or away from the car sides by double-acting pneumatic cylinders operated by a straight-air valve at the control station.

The side brushes are 10½ ft. long with the upper ends 13¼ ft. above the rail top to cover the highest Diesel locomotive side.

The Fullergript brush sections, with plastic cores and Tampico long fibers, overlap slightly for uniform cleaning and are V-belt driven from 3-hp. electric motors at a speed of 240 r.p.m. They are flexibly mounted so as to adjust themselves to car sides which, for one reason or another, may incline slightly. Suitable vertical spray pipes with evenly spaced nozzles are installed just ahead of and behind each washer unit and in the spray guard back of each brush.

The control station for side washers is in an 8-ft. by 38-ft. brick service building about 15 ft. ahead of the lead washer unit. It includes an operator's room with good visibility up and down the track, a pump room, locker facilities and basement with one 2,300-gal. solution storage tank and two 150-gal. use tanks which are connected by pump and piping to supply either full or half-strength solution to the spray pipes by operating necessary valves in the control station.

Some track rearrangement was required for flexible movement of trains to and from the washer without interfering with normal operation. The washer is on Track 6 and there is room for two trains east and



Cleaning an observation car in the first unit of the car washer

west of the washer on Tracks 5 and 7. All steel work is mounted in substantial concrete foundations and that part of the track where car washing occurs has a 19-ft. by 100-ft. concrete sloping drain pan at each washer unit, with center drains and suitable connections to the sewer.

Roof Washer Construction

In applying the roof washer attachment, the steel-beam side supports were strengthened and tied together across the top with steel framing members. The three individual motor-driven brushes were installed in counterweighted hinged frames in such a way as to be readily lowered to bear under predetermined air pressure against the car roof, or raised to clear the upper parts of all cars and locomotives. The maximum clearance is about 18 ft.

The brushes include a horizontal roof brush about 5 ft. long and two 3-ft. sloping eaves brushes which are positioned ahead of the conventional side brushes and operated from a control station at roof level on the outer side of the washer frame. The eaves brushes are adjustable in angular position for most effective washing of either flat or curved dome side windows. A permanent steel step ladder gives access to the control station and cat walks are constructed across the top for inspection and lubrication of brushes.

The first unit of the tandem washer is used to apply either water or cleaning solutions and to scrub the car surface. The second unit is used with clear water only. The cleaning solution is Oakite No. 88, one drum of which is mixed with water in the 2,300-gal. tank and thence distributed in full strength to one of the 150-gal. use tanks and diluted 50 per cent in the other. The solution strengths are generally equivalent to 4 ounces or 2 ounces per gallon of water, respectively. About 3 gal. of solution are required per car and 300 to 400 gal. of water. The water pressure is 40 lb. per sq. in. but perhaps more important than the pressure is adequate pipe size, without restrictions, to give the desired volume of water.

The solution, when used, is applied through spray pipes placed just in advance of the first brush unit. The rotating brushes then scrub in the solution. It

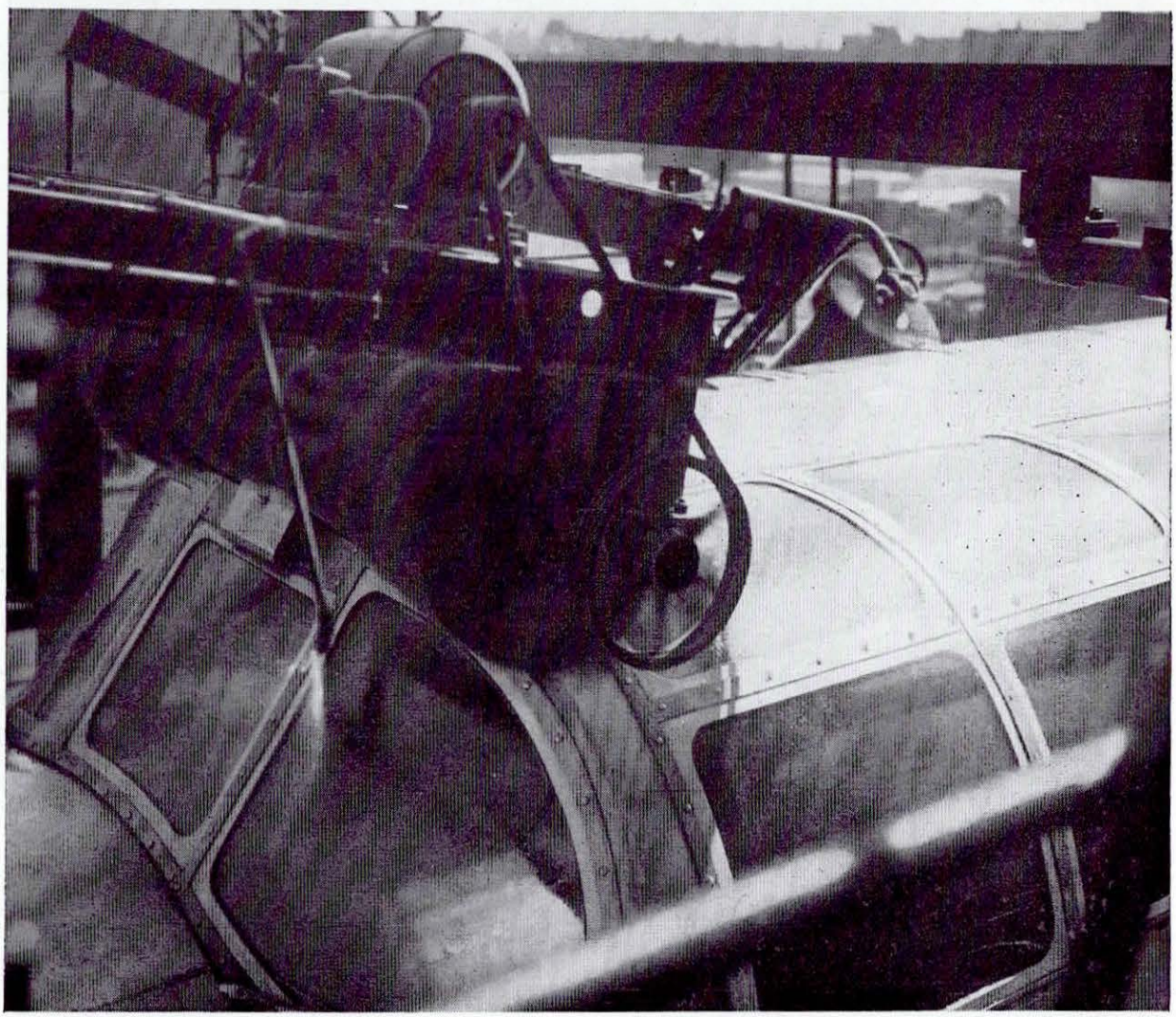
takes about one minute for the car to pass from the first brush unit to the second unit, where clean water is applied by the rotating brushes and rinsing sprays. The time interval between the two units is just enough to permit the solution to cut dirt but not to damage the car finish.

As a train approaches the first unit, the brushes are in their retracted position to provide clearance for the locomotive. When the locomotive has passed through, side brushes are advanced or continued in operation, as the case may be. An operator in the control station on each washer unit then lowers the roof brushes, raising them to pass roof obstructions except domes, which they pass over automatically. The side brushes are advanced by compressed air and the roof brushes also, but the table supporting the latter may be raised or lowered by electrically operated screws. Both side and roof brushes are moved until they come into the correct preset position. Brushes are preset 2½ in. less than the normal car width and height.

The roof brush, the first one to be contacted, comes down low enough to wash the roofs of standard cars and at the same time is so adjusted that it rides up over the front, along the top, and down the back of the domes.

The same applies to the sloping eaves brushes which are the next two brushes to make contacts. The side and window brushes then do their work, followed by a water spray. The train then passes through the second washer unit which does a thorough scrubbing and rinsing job with clear water.

The brushes used with this car-washing machine have long soft bristles which give a mopping rather than a scrubbing action. Individual sections are renewable without disturbing adjoining sections. Long side brushes and eaves brushes are rotated against the direction of car movement and the window and roof brushes with it. The brushes are not allowed to revolve if, for any exceptional reason, the train stops. These brushes have an average service life of about six months. The solution nozzles are checked every day and all moving parts of the washer are inspected and lubricated in accordance with a prescribed program.

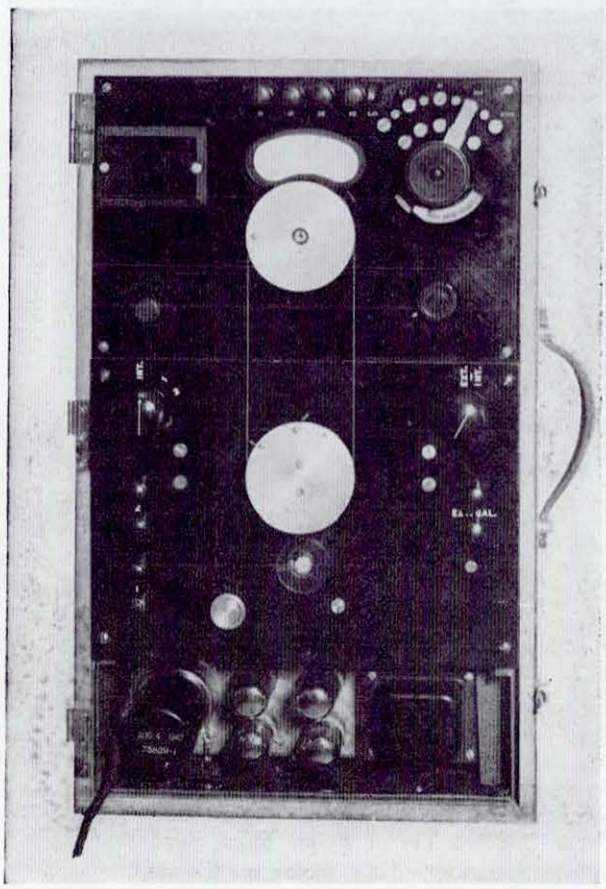


A roof brush passing over one of the domes

TRACTION MOTOR TEMPERATURES IN SERVICE

Fig. 1—Electronic converter and balancing motor used in detecting bridge balance

Fig. 2—Portable self-balancing bridge complete with converter and balancing motor



Occasionally in Diesel-electric locomotive applications, special duty cycles are encountered that make it highly desirable to determine temperatures of the traction-motor windings in service. This article describes the special instruments and techniques devised for such work.

Under some conditions, it is considered good application practice to utilize the full ability of a locomotive beyond its normal continuous rating provided that the motor or generator windings do not exceed predetermined safe temperatures for a duration of time sufficient to cause damage or unduly shorten the insulation life. Severe overheating in a single instance may be sufficient to shrink wedges and relax bands, without causing immediate failure, but subsequent movement of the winding under influence of vibration will cause the insulation to wear through and fail by short circuit or ground even before complete deterioration of insulation is achieved.

The ability of a Diesel-electric locomotive to handle overloads is dependent upon the thermal capacity of the electric apparatus, so that the duration for which an overload may be maintained without harm is determined by the temperature of the windings just preceding its application.

Experienced personnel can calculate—from track profile, train tonnage, and certain carefully chosen assump-

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A procedure for getting the most out of a Diesel locomotive without exceeding permissible generator or traction motor temperatures

tions—the approximate maximum winding temperature that will be reached in a given service. When marginal applications occur, a measurement of winding temperature is necessary to determine more closely the factor of safety.

It is impractical to measure directly the temperature of windings assembled in a motor under a locomotive, but it is practical to measure the electrical resistance of the winding. The temperatures can then be calculated from this resistance measurement, since it is known that as the temperature of copper changes, there is a corresponding change in its electrical resistance.

It is only necessary, therefore, to measure the cold resistance (r) of the windings in question after the motors have stood without power long enough for all parts to reach a uniform temperature (t). This temperature is measured with thermometers placed on the motor parts. The hot winding resistance (R) obtained in actual service is measured at prearranged stops where the maximum motor temperatures are expected. The hot temperature (T) can be calculated from the relation $T = (R/r)\ (234.5 + t) - 234.5$ where temperatures are all in degrees Centigrade.

Method of Measurement

To make the service measurements, the motor field windings are connected with temporary wiring and suitable switches to the measuring instruments, located in the locomotive cab, so that the required readings can be made quickly. The armature resistance is obtained by selecting a span of the armature winding to which connection is made by a special yoke applied by hand pressure to the commutator through the motor inspection opening. Connection between contacts of the yoke and the instrument station is made through a multiple-wire flexible cable. This equipment is coiled and carried in the cab between stopping points for measurements.

It is necessary to remove power from the motors and bring the train to a stop before the resistances can be measured. During this interval, the motors are cooling. For this reason, the temperature of the winding, as determined for the instant at which the resistance is obtained, is considerably lower than the actual temperature of the winding when power was removed. This difference is represented by the amount of cooling taking place during this elapsed time. The rate of this cooling can be determined by recording the elapsed time for each resistance reading from the instance of power removal, and then plotting the values as temperature with respect to time. A curve drawn through these points and extended, in accordance with accepted cooling-curve practice, to the power-off time will give the most probable temperature at this instant. Obviously a minimum elapsed time will give the greatest accuracy.

While this method is recognized as the most reliable means for motor temperature determination by laboratories and test floors throughout the electrical industry, attempts to apply it to Diesel-electric locomotive service tests were disappointing. Series-wound traction motors, with low-resistance components, made the use of a Kelvin double-bridge desirable, but it was found extremely difficult to use the conventional suspension-type of galvanometer with this bridge. Engine vibration affected the galvanometer so seriously that time was lost and readings were erratic. The cooling curves so obtained were unsatisfactory and questionable. Engines cannot be shut down during these measurements because tests with scheduled revenue trains must be made with minimum delay. Continued operation of the Diesel engines and air compressors during the stop is necessary to permit recharging the air-brake system in order to make a quick start as soon as measurements are finished.

Electronic Instruments

Because of the unsatisfactory experience with conventional suspension-type galvanometers, an electronic method of detecting bridge balance was used.

The electronic converter and balancing motor unit made by Brown Instrument Company, Division of Minneapolis-Honeywell Company, was found to have the required sensitivity and was not affected by vibration. This unit receives the out-of-balance e.m.f. from the bridge, converts it to alternating current, amplifies this voltage and uses the amplified voltage to excite one winding of a split-phase motor. The direction of rotation of the motor is dependent upon the

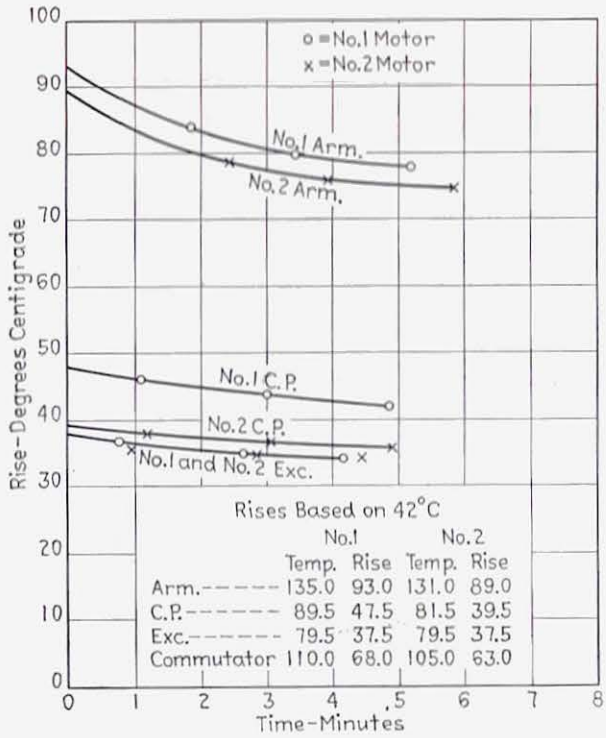


Fig. 3—Typical cooling curves obtained with the self-balancing bridge

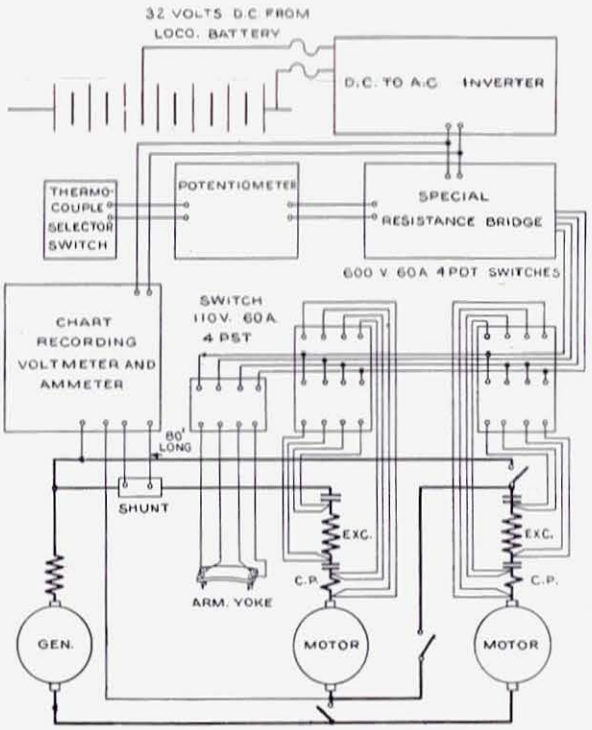
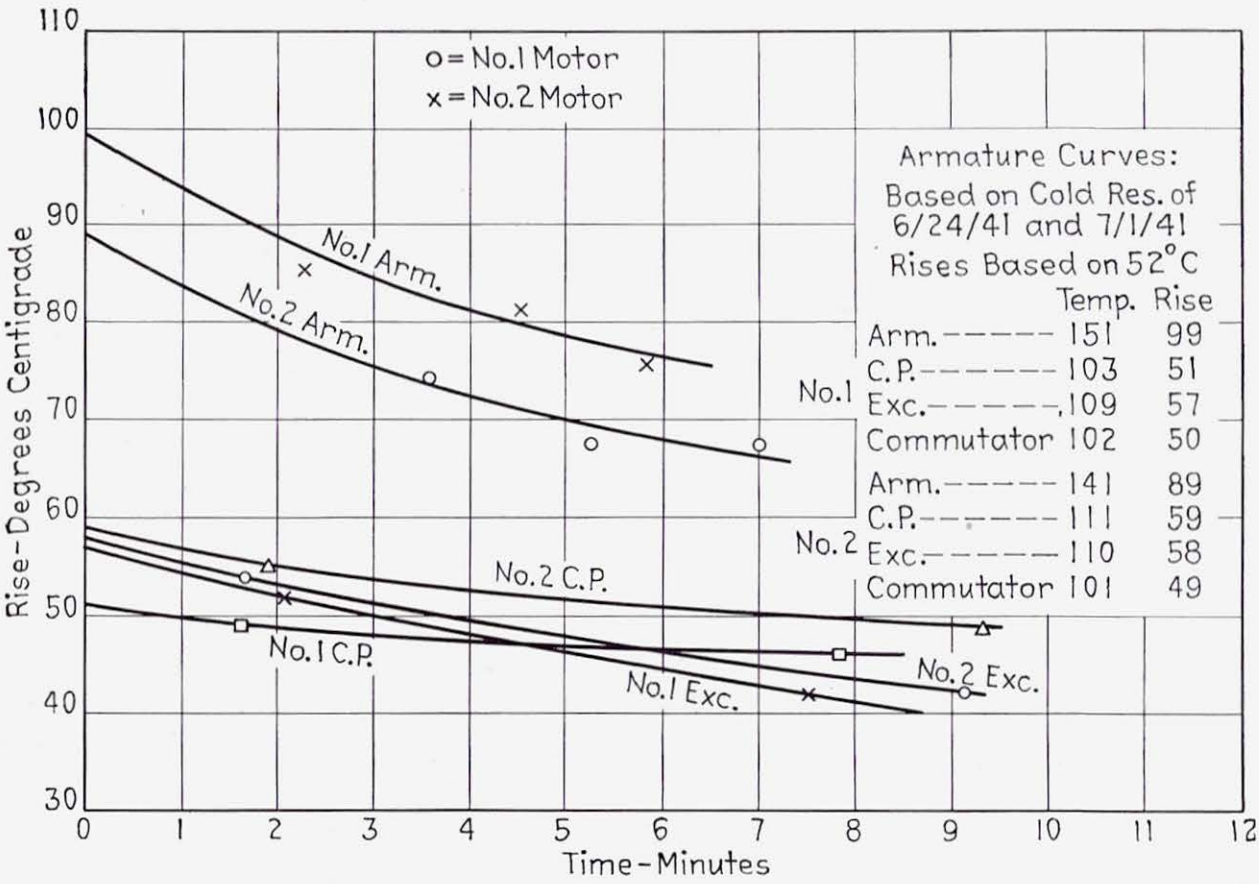


Fig. 5—Connection diagram for measurement equipment

Fig. 4—Typical cooling curves previously obtained using conventional instruments



polarity of the direct-current e.m.f. received from the bridge. This converter and balancing motor are shown in Fig. 1.

A General Electric resistance bridge was mounted in a case with a Brown converter and balancing motor. The galvanometer was removed from the resistance bridge and the galvanometer connections were wired to the converter input. The knob provided to rotate the resistance dial of the bridge was removed and a pulley mounted in its place. The balancing motor was used complete with gearing and slide wire drive as employed in the Brown circular-chart temperature recorder and coupled to the pulley mounted on the bridge resistance dial shaft. The completed instrument is shown in Fig. 2.

Self-Balancing Bridge

With this arrangement, the instrument becomes a self-balancing resistance bridge and upon application of power to the bridge circuit any unbalance of the bridge causes the balancing motor to rotate so that the bridge dial is moved in the correct direction to restore balance. Full rotation of the dial is obtained in approximately 30 seconds. As soon as balance is achieved, the resistance value can be read directly from the bridge dial. Vibration in no way affects the accuracy of balance.

This special instrumentation with its attendant auxiliary equipment reduces the technique and skill required to a point where measurements can be made under adverse service conditions with a speed and accuracy equal to or even surpassing those obtained under more favorable test-floor conditions.

For example, field tests were made consisting of three resistance measurements on each of four fields and two armatures in an elapsed time of less than six minutes of power removal to the time the train was ready to proceed again after completion of the measurements.

Figure 3 shows a typical set of curves obtained by these measurements for the armature (Arm), commutating pole (CP), and main field (Exc). Figure 4 shows a set of similar curves made from the inadequate data obtained previously when using conventional instruments. A comparison of these results shows the definite superiority of the special instrument.

In order to obtain additional data on locomotive performance, it is desirable during a test to measure other temperatures, such as the temperature of ambient air, traction-motor armature bearings, traction-motor axle bearings, traction-motor frame, and ventilating exhaust air. When these temperatures are desired, they are measured by thermocouples connected to a selector switch so that the temperatures can be measured with a thermocouple potentiometer.

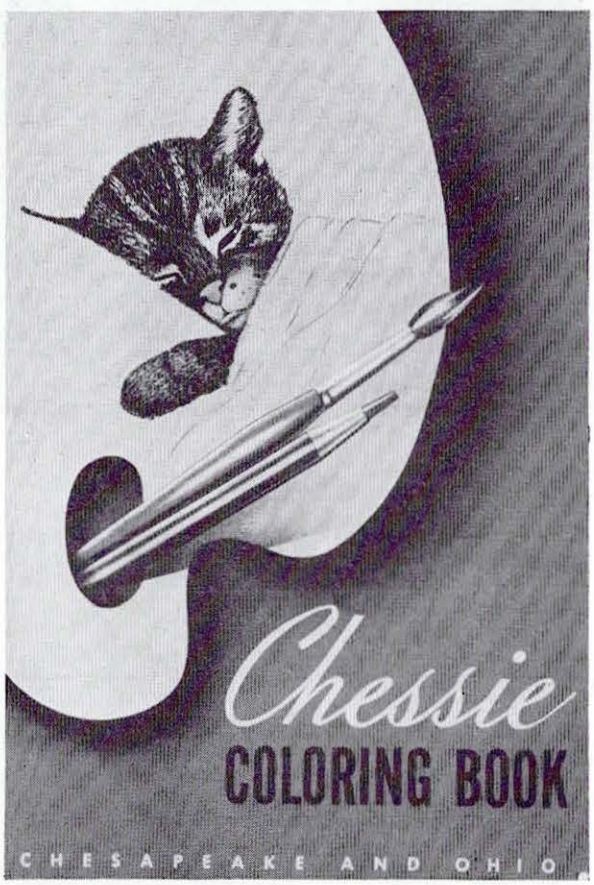
These temperature measurements are usually made while the train is at maximum speed so that the vibration problem is more severe than that encountered during resistance measurement. The electronic converter and balancing motor provides a visual indication of potentiometer balance, and eliminates the use of a conventional galvanometer such as is ordinarily provided with a thermocouple potentiometer.

The balancing motor used in the self-balancing resistance bridge was arranged to be quickly disengaged from the driving unit. The extension of the motor shaft was equipped with a dial for indication of rotation. True potentiometer balance was indicated when the motor stopped rotating. Unbalance of the potentiometer was indicated by rotation of the motor, the direction of rotation indicating the direction of potentiometer unbalance. A selector switch was mounted on the panel supporting the balancing motor. With this switch, the output of the resistance bridge or the thermocouple potentiometer could be selected and fed into the electronic converter. With this arrangement thermocouple e.m.f. could be measured at any time irrespective of locomotive vibration or motion.

Figure 5 shows the connection diagram of the measuring equipment used for a typical test. The armature yoke shown in this figure was applied by hand to each of two armatures in turn to measure armature-coil resistance.*

Field tests with this equipment show it to be definitely superior to any equipment previously available. Fast, accurate readings can be obtained without a complicated set up or specially trained personnel.

*Test method details are given in A. I. E. E. Technical Paper 45-83, "Measurements of Railway Motor Temperatures in Service," by J. W. Teker. An abstract of this paper also appeared in the July, 1945, issue of Railway Mechanical Engineer.



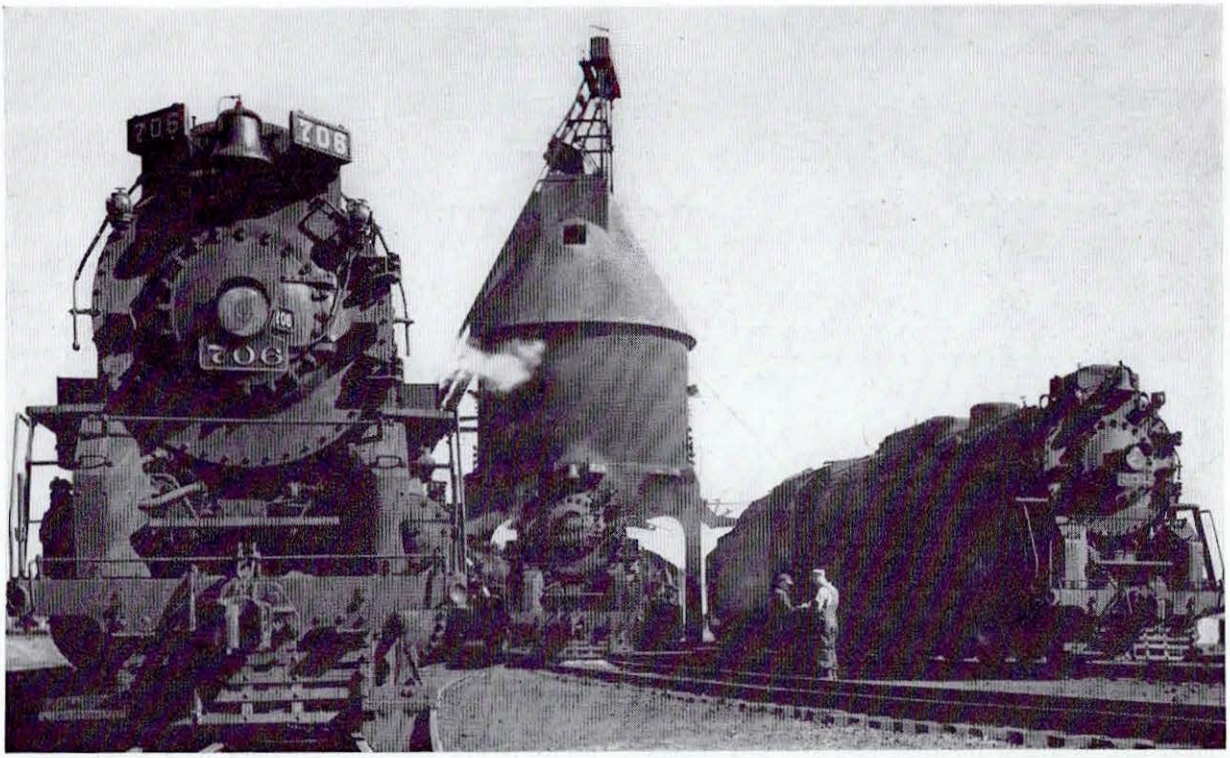
The "Chessie" coloring book shown above, complete with crayons, and a "comic book" history of the railroad are being distributed free to children riding Chesapeake & Ohio trains

A seven-mile line revision (above) on the line between Bellevue, Ohio, and Frankfort reduced grades and curvature. This project was completed in 1947. Teletype is in service at principal points on the main line between Buffalo and Chicago, and between Arcadia, Ohio, and Frankfort, Ind. The equipment illustrated below is at the Cleveland office

TONNAGE WITH SPEED ON THE NICKEL PLATE

Designed to keep trains running—not standing —yard capacities are small; heavy density is moved over single-tracked railroad; progressive modernization and improvement program back of enviable operating statistics

The New York, Chicago & St. Louis moves each freight car it handles a greater average distance each day—78.4 mi. in June, 1948—than any other large steam railway in the Eastern district of the United States. The average speed of Nickel Plate freight trains for the past year and a half, even after including branch-line locals and switch runs, was 19.2 m.p.h., or about 20 per cent higher than the national average. Gross ton-miles per freight train-hour equaled 51,659 over the system in April, 1948, and on the busy Buffalo division—less than half of which is double-tracked—



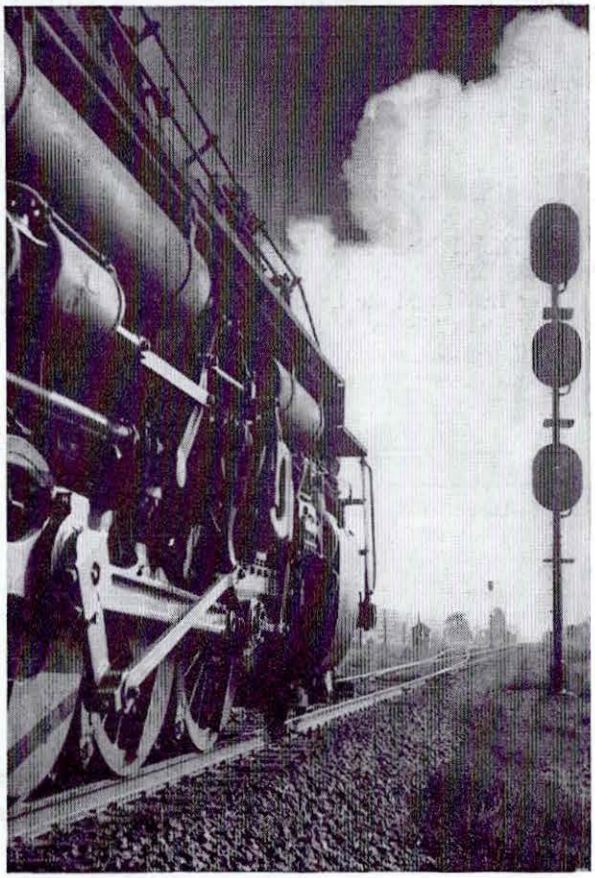
Modern engine terminals expedite locomotive turn-arounds. This completely new facility above at Bellevue, Ohio, was completed early in 1948. Below—Centralized traffic control plays an important part in maintaining the regularity of Nickel Plate manifest freight schedules

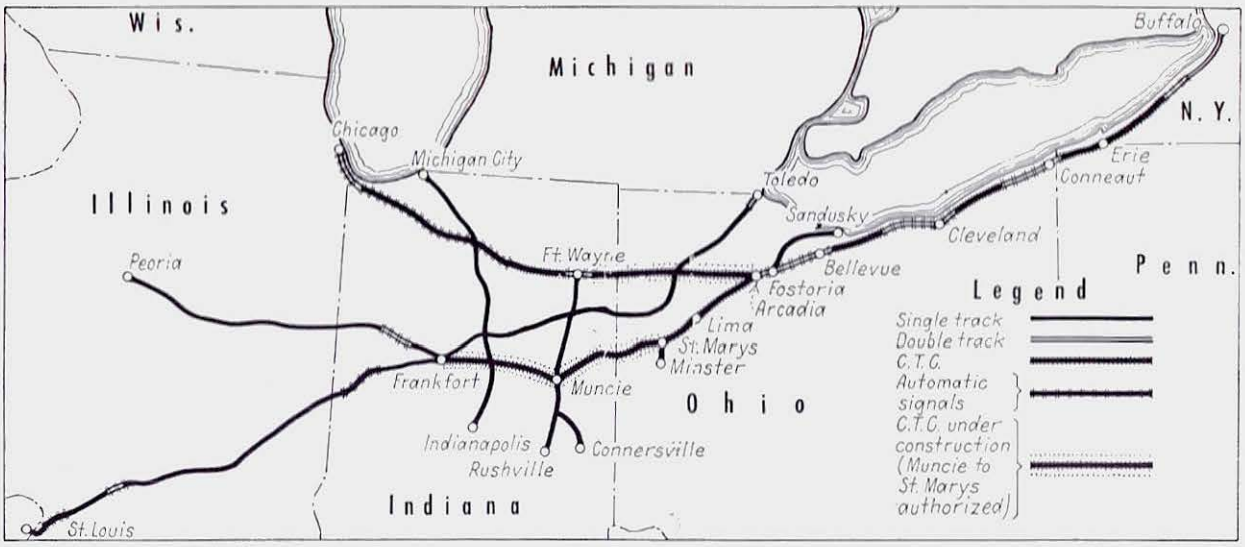
reached a record 94,941. Nickel Plate freight locomotives ran an average daily mileage of 138.9 during the first six months of 1948, compared with a national average of about 91.8, and in the severe winter month of February this year, averaged 156.7 mi. daily, excelling the locomotive mileage performance of any of the 56 roads included in the Interstate Commerce Commission's monthly "Operating Statistics of Large Steam Railways."

These highlights of Nickel Plate operating results represent the product of an effective modernization program carried out through close integration of the functions of the several departments of the railroad.

Soon after the Van Sweringens acquired the Nickel Plate in 1916, the newly elected president, John J. Bernet, attacked the relatively unsatisfactory fuel performance of locomotives and thereby started the ball rolling toward Nickel Plate's present-day high standards of train performance in all categories. This investigation into the cause for high fuel consumption showed that the average could be greatly improved by heavier loading of locomotives. In order to maintain the schedules of heavier trains it was necessary to make improvements in the physical plant of the road. To get full advantage of an improved physical plant, modern signaling practices to eliminate stops and slow-downs had to be introduced. Thus the effort to improve fuel efficiency, started over 31 years ago, set in motion a general rehabilitation and modernization program which continues, unabated, today. It has resulted in a closed circle, wherein the increased efficiency of the operations produces service more attractive to shippers, and the increased volume of traffic thus obtained enables the road to improve further its transportation of volume traffic.

In a program extending over the past 10 years, $33





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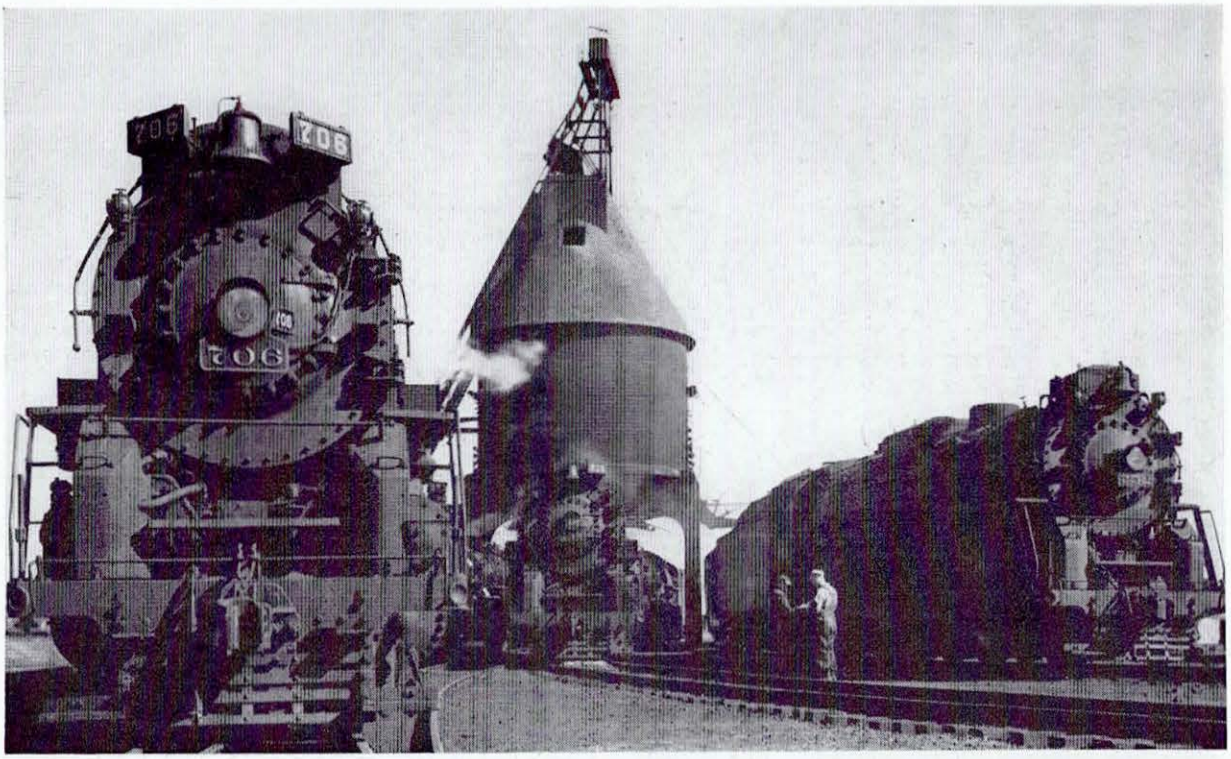

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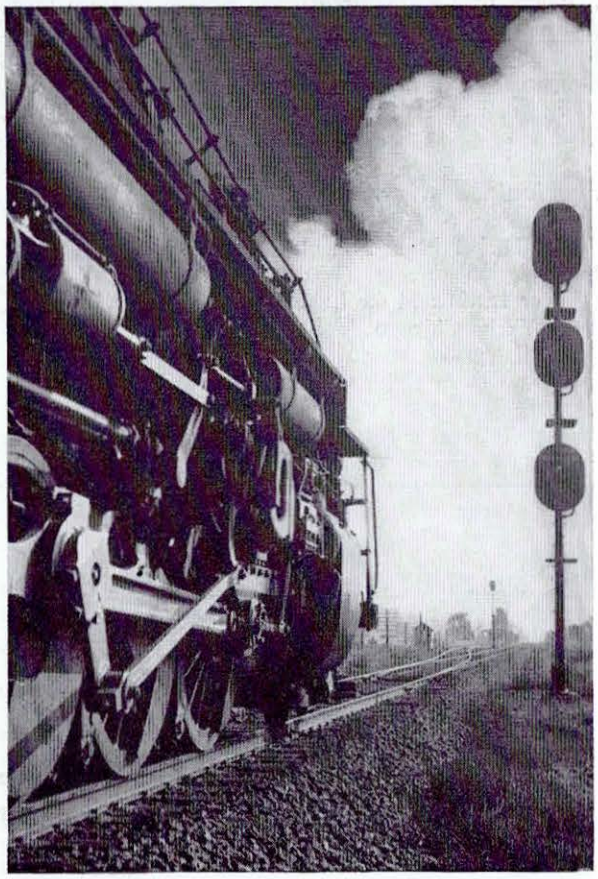


The new general storehouse just completed at Lima, Ohio, combines compactness and accessibility. Extensive use of glass bricks and fluorescent lighting results in unusual brightness

million was expended for equipment and $19 million for improvements to the road, a total equal to $3,141 annually per mile of road. The benefits from these expenditures, carefully planned to improve transportation practices, are reflected clearly in the general improvement in the Nickel Plate's status. In 1947 and the first half of 1948, despite great increases in the unit cost of doing business, the Nickel Plate's position was relatively better than in the boom year of 1929. Table I compares pertinent data for that year with depression 1937; postwar 1946; 1947; and the first 6 months of 1948.

Physical Description

The Nickel Plate system is the product of a 1923 consolidation of the Toledo, St. Louis & Western (Clover Leaf) and the Lake Erie & Western with the New York, Chicago & St. Louis, which created a 1,687-mi. system serving a six-state area. The principal lines extend like a three-pronged fork from Buffalo, N. Y., through Cleveland, Ohio, and Bellevue, to Chicago, Peoria and St. Louis. The regional trend of traffic is predominantly eastward over these routes. The three east-west lines are supplemented by branches to Sandusky, Ohio, and Toledo, and are intersected by branches running north and south from Fort Wayne, Ind., to Connersville, and from Michigan City to Indianapolis. More than two-thirds of all main track is laid with rail weighing 100 lb. or more per yard. The 1947 rail program included renewal of lighter rail with 54 mi. of 131-lb. rail and 58 mi. of 112-lb. rail—the former being installed generally in single track and the latter in double track.

In order to permit high utilization of the single-tracked main lines (all but 250 of the 1,687 mi. operated are single-tracked) much of the main line has been equipped with either centralized traffic control or automat.c block signaling. (The accompanying map indicates signaling in operation and installations in progress or authorized.) Freight train schedules are set up to favor eastbound movements, since approximately 63 per cent of the net ton-miles handled moves in that direction. During July, 1948, the average speed of all eastbound trains was 21.2 m.p.h., while westbound the average was 18.7 m.p.h. Although eastbound traffic is

Table I—Important Operating Figures Indicate Improved Status Since 1929

	Year 1929	*Year 1937*	*Year 1946*	*Year 1947*	*Six months Jan. to June, 1948*
Revenue ton-miles	5,291,371,000	4,703,924,519	7,614,039,858	8,568,158,202	4,225,810,968
Average net tons carried per freight train	700	804	1,138	1,115	1,129
Gross ton-miles per freight train-hour	26,279	37,693	48,782	48,696	48,827
Locomotive-miles per serviceable locomotive day (freight)	132.1	111.2	150.7	164.4	162.0
Car-miles per freight car day	49.7	63.4	76.8	78.4	78.6
Average freight train speed (m.p.h.)	14.2	18.1	18.9	19.2	19.2
Average revenue per ton-mile (mills)	9.87	8.34	9.20	10.34	12.33
Operating revenues	$ 56,385,456	$ 41,612,266	$ 74,332,966	$ 92,520,841	$ 54,027,482
Operating expenses	$ 39,896,885	$ 28,395,481	$ 58,506,093	$ 67,245,584	$ 37,285,535
Operating ratio	70.76	68.24	78.71	72.68	69.01
Interest on debt	$ 6,090,685	$ 7,356,824	$ 3,962,096	$ 3,443,780	$ 1,766,875
Number of times interest was earned	2.21	1.36	2.41	3.38	4.91
Net income	$ 7,390,042	$ 2,655,561	$ 5,567,790	$ 8,178,013	$ 6,900,643

given preference, nevertheless the average speed of the westbound trains is well above the national average. The average gross tonnage of all trains in July, 1948, was 2,975 eastbound and 2,197 westbound. Eastward trains averaged 53 loaded and 6.8 empty cars, while westward trains averaged 28.3 loaded and 27.5 empty cars.

Fast freight schedules are maintained in both directions between Chicago, Peoria and St. Louis on the west and Cleveland and Buffalo on the east. Chicago-Buffalo trains are made up at Calumet yard, about 12 mi. from Chicago; pick up from the Indiana Harbor Belt at Osborn, 11 mi. further east, and from the Elgin, Joliet & Eastern at Hobart, 12 mi. east of Osborn. Under ordinary conditions, non-stop runs are made to West Wayne yard at Fort Wayne, Ind., 151 mi. east of Chicago. Power is changed and, as soon as inspections are completed, the freights continue eastward—normally without stops over the division—to Bellevue, 125 mi., where all trains, both eastbound and westbound, are classified. Bellevue is the Nickel Plate's principal classification yard. It is relatively small, having a combined east and west capacity for 3,200 cars, and frequently handles more than that number in a single 24-hr. period. The next two divisions, from Bellevue to Conneaut, Ohio, 132 mi., and Conneaut to Buffalo, 113 mi., are covered generally without coal or water stops, the locomotives operating through Conneaut on the same trains.

Trains from St. Louis and Peoria are consolidated at Frankfort, Ind., where primary classifications are made and, when schedules permit, pre-classification for connections at Buffalo is performed. This further breakdown, however, is not allowed to interfere with the on-time operation of the trains.

Motive Power Selected by Road Tests

Exhaustive road dynamometer tests and mechanical research are a continuing process on the Nickel Plate. Three types of motive power do the bulk of the work in three classes of service: steam in road freight, and Diesel-electric in passenger and switching service. A 2-8-4 type steam locomotive with a rated tractive force of 64,100 lb. has been adopted as standard for road freight service. This locomotive develops a high horsepower at speed and, since Nickel Plate manifest trains are operated with heavy tonnage at maximum authorized speeds—60 m.p.h. over most of the main line—with a minimum number of stops, it has proved highly satisfactory. Seventy locomotives of this class are soon to be augmented by 10 now under construction at the Lima Locomotive Works of Lima-Hamilton Corporation. The latest 30 of these locomotives are equipped with roller bearings on engine trucks and drivers, and the 10 under construction are to be similarly equipped. Tenders are mounted on two six-wheel trucks and have a capacity of 22,000 gal. of water and 20 tons of coal.

Eleven 2,000-hp. Diesel-electric units were purchased early in 1948 for passenger service. They are used, coupled, as 4,000-hp. locomotives on the heavy Chicago-Cleveland-Buffalo trains, and as single units on the lighter Cleveland-St. Louis run. They have proved ideally adapted to this service since their rapid rate of acceleration permits the fastest possible schedules to be maintained with the many intermediate stops required for passengers and mail at towns dependent on the Nickel Plate for such service. A two-car local running daily except Sunday between Lima and Peoria continues to be steam operated.

Table II—Nickel Plate Made Drastic Debt Reductions and More Than Halved Interest Over Ten-Year Period

	Balance Dec. 31, 1937	*Balance Dec. 31, 1947*
Funded debt		
Mortgage bonds	$150,505,000	$102,951,000
Equipment obligations	9,687,000	18,115,659
Total	160,192,000	121,066,659
Interest on debt	7,356,824	3,443,780

Switching service is being Dieselized as rapidly as possible—1,000-hp. units being adopted as standard. Diesel-electric switchers are grouped at various points according to builder in order to simplify maintenance. Forty-three Diesel yard locomotives are in service and 13 on order. Six of the switchers in service at Buffalo and six at Cleveland have been equipped with radio on an experimental basis. Results have been satisfactory and expansion of the use of radio-equipped locomotives in yard service is under consideration.

Equipment is designed and maintained to high standards so that road failures are minimized and availability maximized, resulting in high average locomotive mileage. Motive power is designed and kept in condition to "stand the gaff" of continuous high-speed operation with tonnage trains.

Speed recorders recently installed on all locomotives in manifest service have proved valuable not only to protect against running at excessive speeds, but also to take maximum advantage of permissible speeds so that as little time as possible is lost through operation of trains at less than the prescribed maximum speeds.

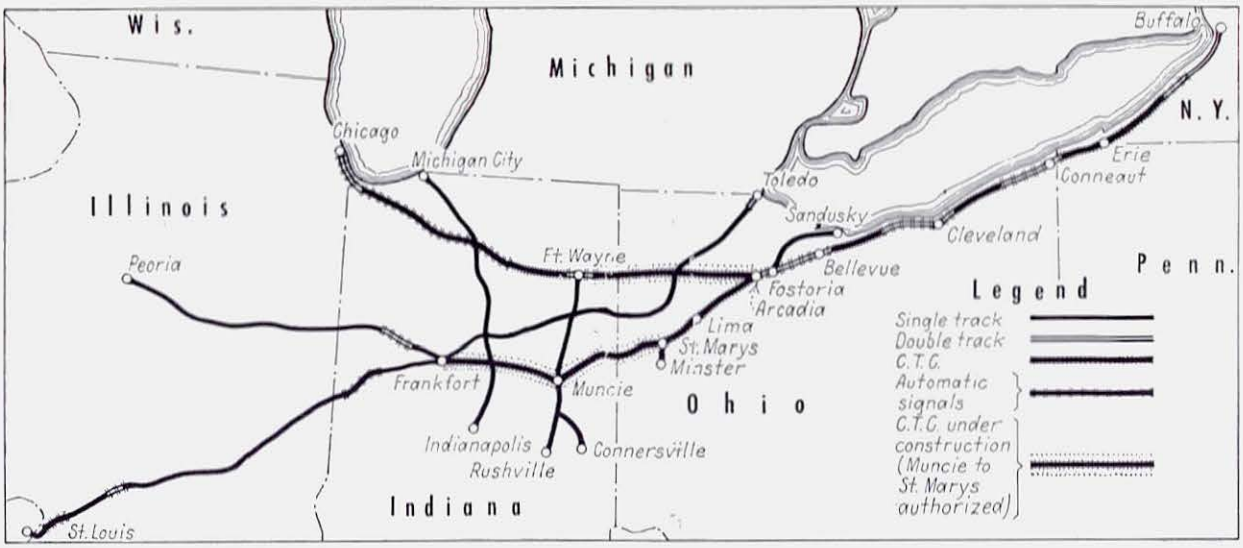
Water for locomotives is treated at points where the quality of the local supply is not desirable. Treating plants are located at Fort Wayne, Frankfort, Bellevue, Lima, and Liberty (Muncie), Ind. The purchase of locomotive coal is carefully supervised to assure receipt of grades which will not have an adverse effect on the steaming qualities of the locomotives, or require cleaning of fires between regular engine terminals.

Fast Operation an Economy

Regularity of operation of freight trains is of distinct economic advantage to the Nickel Plate. Its competitive position is enhanced thereby. Quick turnaround and high utilization of locomotives and cars is made possible. Expedited handling reduces per diem payments, since few cars in overhead traffic remain on Nickel Plate rails long enough to accrue more than a single day's charges. Hopper cars in coal traffic released empty in the Chicago area are often returned

Table III—Fewer Locomotives Do More Work

	No. of locomotives			*Total tractive*	*Average tractive*	*Gross ton-miles*
Dec. 31	*steam*	*Diesel*	*total*	*force*	*force*	*(thousands)*
1947	296	41	337	17,278,070 lb.	51,270 lb.	20,235,644
1946	313	10	323	16,102,620	49,853	17,954,973
1937	304	—	304	14,314,700	47,088	12,754,186
1929	465	—	465	18,590,400	39,955	14,800,751



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ROADMASTERS STUDY EFFECT OF CHANGING CONDITIONS ON THEIR WORK

With a record attendance, the annual meeting, held concurrently at Chicago with that of Bridge & Building men, placed emphasis on new problems—Large products exhibit was an accompanying feature

The constantly changing conditions confronting railroad maintentnce-of-way supervisors, and the urgent necessity of keeping up with them, were the dominant theme in almost everything that went on during the three-day annual convention of the Roadmasters' and Maintenance of Way Association, held at the Hotel Stevens, Chicago, on September 20-22. From the first rap of the president's gavel to the close of the business session on the last day, those present spent their time appraising these changes—ranging all the way from the increased cost of materials and labor to the most recent developments in chemicals for killing weeds—and in considering what should be done about them.

Several factors combined to make an outstanding meeting. For one thing it was the third consecutive convention of the Roadmasters' Association to be held concurrently with that of the American Railway Bridge & Building Association. Another was the display of 93 manufacturers of a wide range of materials, equipment and appliances in the large exhibit hall of the hotel, which undoubtedly brought many railway men to Chicago at this time. Still another was arrangements by 13 committees of the American Railway Engineering Association to hold meetings in Chicago during the conventions, in order to be able to attend specific sessions of the conventions and the railway supply exhibit.

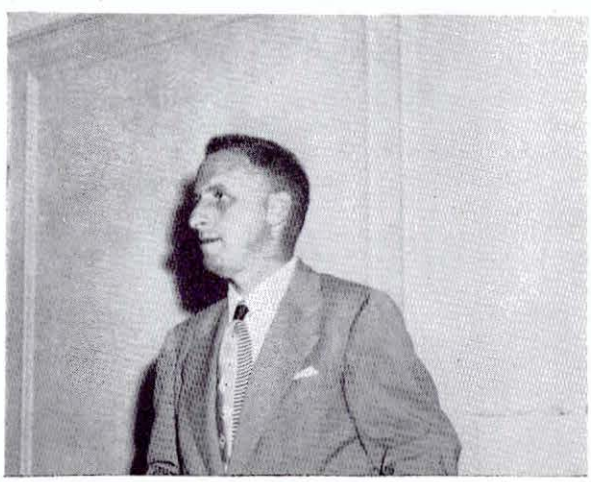
Doubtless contributing in some measure to the success of the meetings was the presence of the Railroad Fair on Chicago's lakefront. In fact, instead of the usual inspection trip to a manufacturing plant, which has been a regular feature of each of these conventions for many years, the final afternoon of the three-day period was left open to give those present an opportunity to visit the fair.

The combined attendance at the two meetings, totaling 900 members and guests, established a new high record since the practice was started of holding these meetings concurrently. This figure compared with a total registration of 765 members and guests in 1947 and 693 in 1946.

An account of the highlights of the Roadmasters' sessions, and of various joint activities of the two groups, is given in this article. Next week's issue will contain a similar account of the activities of the Bridge and Building Association.

The convening of the two meetings was signaled by a joint opening session on Monday, September 20. Presiding jointly over this session were A. B. Chaney, assistant engineer maintenance of way of the Missouri Pacific, and president of the Roadmasters' Association, and J. S. Hancock, bridge engineer of the Detroit,

With President Chaney of the Roadmasters' Association an interested listener, J. H. Aydelott, vice-president, A.A.R., addresses the joint opening session.



A. E. Perlman, general manager of the Denver & Rio Grande Western, told how roadmasters and bridge and building supervisors could help hold down maintenance costs

Toledo & Ironton, and president of the Bridge & Building Association. All separate sessions of the Roadmasters' group were directed by Mr. Chaney, assisted by R. L. Fox, division engineer of the Southern and first vice-president of the association.

As the first item of business at the opening session, words of greeting were extended by C. H. Mottier, as president of the American Railway Engineering Association, by J. B. Templeton, as president of the Track Supply Association, and by Howard Mull, as president of the Bridge & Building Supply Men's Association. Also, Lewis Thomas, secretary of the Track Supply Association, explained the background of the extensive display of manufacturers' products that had been arranged in the hotel's exhibit hall jointly by the Track Supply group and the Bridge & Building Supply Men's Association.

The joint opening session was closed by an address by J. H. Aydelott, vice-president, Operations and Maintenance department of the Association of American Railroads.

"Few Comprehend Changes"

Immediately after the opening sessions, the two groups separated to begin their individual meetings. In his opening address before the Roadmasters' meeting, President Chaney referred to the past year as "a period of changing values of both labor and material as compared to the dollar value of these items in past years," and said that "this has focused our attention on new methods and devices in our efforts to meet the situation." In effect establishing a theme for the meeting, he went on to say that "few here today can fully comprehend the extent of the changes that have been made in track maintenance and materials during the 65 years that this association has been in existence." Enumerating some of the more important developments of the past 25 or 30 years, he said that "these developments have presented many problems to track men, but few will deny that the next quarter century will reveal as many, if not more, changes and problems."

Noting that some of the subjects discussed at the convention in 1923 are still fundamental today, he said that, while a subject may remain basic, the detailed methods and related problems vary from year to year because of new conditions, requirements, and developments. "This necessitates continuous investigation, research, alertness, a desire for improvement and a willingness to work if progress is to be made and sustained."

When Mr. Chaney had concluded his opening remarks the group immediately began consideration of the business at hand, which consisted principally of the presentation and consideration of six technical committee reports and of three addresses on subjects of particular interest at this time. The subjects of the committee reports were: Keeping Power and Spring Switches in Operation During Winter Storms; Use of Work Equipment at Derailments and in Coping with Other Emergencies; Education of Track Employees in the Cost of Materials, Tools and Equipment; Reducing Rail Joint Maintenance; Modern Methods of Controlling Vegetation and Woody Plants; and Functions and Responsibilities of Section Gangs.

The addresses included one by G. L. Sitton, assistant chief engineer of the Southern, on Sand Methods of Stabilizing Roadbed; another by G. M. Magee, research engineer, Engineering division, A.A.R., on Rail Joint Bar Design; and a third by J. W. Risk, superintendent of work equipment of the Canadian National, on Snow Fighting in Canada.

In addition, two other addresses were presented during the joint session on Tuesday afternoon. One of these was by O. H. Carpenter, general roadmaster of the Union Pacific, whose subject was Safety Problems as Affected by Diesel Operation and the Increased Mechanization of Maintenance Work. In the other address A. E. Perlman, general manager of the Denver & Rio Grande Western spoke on How the Roadmaster and Bridge and Building Supervisor Can Help Hold Down Maintenance Costs.

A special feature of the meeting was the presentation of certificates of honorary membership in the Association to Frank R. Layng, vice-president and chief engineer* of the Bessemer & Lake Erie, and Armstrong Chinn, president of the Terminal Railroad Association of St. Louis. Messrs. Layng and Chinn, and T. F. Donohoe, retired roadmaster of the Baltimore & Ohio, were elected to honorary membership at last year's meeting. Mr. Donohoe died during the last year.

An outstanding event of the meeting was a banquet on Tuesday evening, tendered to members of the two associations and their families by the Track Supply Association and Bridge & Building Supply Men's Association. A total of 1,230 persons attended.

New Officers Elected

In the election of officers at the final session of the Roadmasters' meeting on Thursday, Mr. Fox was advanced to president; Neal D. Howard, western editor of *Railway Age*, Chicago, was advanced from second vice-president to first vice-president; A. G. Reese, district engineer maintenance of way, of the Chicago, Burlington & Quincy, Galesburg, Ill., was advanced from director to second vice-president; and E. E. Crowley, roadmaster of the Delaware & Hudson, Albany, N. Y., was re-elected treasurer. Directors elected were A. H. Whisler, assistant engineer of the Pennsylvania, Philadelphia, Pa. (re-elected); and H. W. Kellogg, division engineer of the Chesapeake & Ohio (Pere Marquette district), Detroit, Mich.

In 1949 the annual meetings of the Roadmasters' Association and the Bridge & Building Association will again be held concurrently at Chicago, the tentative dates being September 13-15.

Abstracts follow of all of the committee reports and of the addresses by Messrs. Carpenter, Magee, Perlman and Risk.

Close Supervision Needed

The greatly increased unit costs of track and bridge repairs have brought about a need for the closest possible supervision, said Mr. Aydelott in his address before the joint opening sessions. It is no longer sufficient for a roadmaster or a master carpenter to main-

*Effective October 1, Mr. Layng retired from active service but retains his connection with the road with the title of consulting engineer.

tain a set schedule for inspection duties in his territory, he said. The various gangs should be checked at times when they are not expecting the supervision to be near.

Mr. Aydelott said he had heard the argument on several occasions in behalf of maintenance-of-way employees that they should have higher wages because of increased productivity due to skills acquired in present-day maintenance. In view of such arguments, he said, "it behooves the roadmaster and the master carpenter to see that his railroad gets a full day's work for a full day's pay lest his program suffer."

Mr. Aydelott at one point told his audience that, in the use of manpower and materials, "no individual group on the railroad has the opportunity for economies that lies in your hands." At another point he said that "the roadmaster, perhaps more than any other individual on his property, is in a position to suggest where maintenance money might be saved by realinement for the purpose of reducing wear and tear on track and equipment, and from improved drainage."

Other matters discussed by Mr. Aydelott included the large savings being realized by the railroads as a result of lengthening the life of ties; the research program that the Association of American Railroads has undertaken in collaboration with the lumber manufacturers to determine if still longer life can be obtained from ties; research activities of the A.A.R. looking to improvements in rolling stock; and the plans for the association to start construction soon on a new central research laboratory in Chicago.

The Supervisor and Costs

Speaking before the joint session on Tuesday afternoon on How the Roadmaster and Bridge and Building Supervisor Can Help Hold Down Maintenance Costs, Mr. Perlman first showed how the approach to this problem must be influenced by changing conditions. Contrary to the situation that prevailed during the war and for a while thereafter, when "cost was secondary to volume," Mr. Perlman said that the railroads more than ever must now be "cost conscious,"—that "if we are to keep the railroads dominant in the field of mass transportation we must help halt spiraling costs."

Mr. Perlman advised his listeners to scrutinize closely every practice, including standard plans, on their respective roads to determine if improvements can be made. When structures are being designed he advised group discussions among the personnel of the road involved to assure that the structure will be most

Left—The Southern was represented by a large group. Seated (left to right): E. Bennett, ch. engr. maint. of way & struct.; G. L. Sitton, asst. ch. engr.; T. M. von Sprecken, asst. to ch. engr.; R. L. Fox, div. engr.; H. A. Metcalfe, div. engr. Second row: Frank M. Kaylor, asst. supvr.; J. S. Wearn, ch. engr. maint. of way & struct.; A. J. Denton, asst. div. engr.; J. D. Henley, trk. supvr.; J. W. McPherson, trk. supvr. Third row: J. E. Griffith, asst. ch. engr. maint. of way & struct.; W. H. McNairy, trk. supvr.; B. H. Goodwin, div. engr.; H. C. Fox, div. engr.; J. L. Fisher, trk. supvr.; S. B. Hinton, Jr., trk. supvr.

Right—This group came from the New York, New Haven & Hartford. Seated (left to right): Michael F. Sullivan, rdm.; John A. Gray, Jr., trk. supvr. Standing: Charles P. Richmond, asst. trk. supvr.; P. O'Reilly, trk. supvr.; W. W. Chaffee, trk. supvr.; A. L. Bartlett, asst. to ch. engr.; A. A. Cross, engr. maint. of way; E. E. Turner, supvr. wk. equip.; J. B. Bell, engr. of trk.; J. M. Reardon, trk. supvr.

economical from every point of view. As means of increasing the efficiency of the forces, Mr. Perlman advocated that the roadmaster or supervisor make a careful study of each foreman, that he gather around him as many young men as possible, that he help his foremen plan their work, and that care be taken to insure that the proper materials and eqiupment needed for a particular job are on hand.

Turning to a consideration of power equipment, Mr. Perlman said that the performance of power tools and work equipment must be given careful consideration; that the supervisor should be thoroughly familiar with the operation of work equipment under his direction to insure its proper use; that the use of work equipment must be scheduled carefully to assure full utilization; and that interruption to work due to passing trains must be reduced to the minimum.

Finally he showed how the supervisor or roadmaster can be a factor in promoting goodwill with shippers, citing several examples to demonstrate this point.

Rail Joint Bar Design

In his address on the design of joint bars, which was illustrated by slides, Mr. Magee discussed the considerations involved in developing joint bars for the new rail designs that were adopted by the A.R.E.A. in 1946 to supplant the 112-16. RE and 131-16. RE rail sections. After briefly discussing the reasons for changing the designs of these rail sections, Mr. Magee said that the revised designs of joint bars for the new sections were the culmination of 10-year service tests of various joint-bar designs. Tests on the Pennsylvania and the Atchison, Topeka & Santa Fe were undertaken, he said, to study the influence of lengths of bar, headfree or head contact bearing, controlled or full bearing, toeless or long toe design, and certain special types.

Mr. Magee reviewed the results of these tests and then explained the nature of the changes that were made in the new joint bar design as compared with the former designs. One of the most important changes, he said, was a reduction in the lateral stiffness of the head to make it possible to deflect the bar with the applied bolt tension to take up wear. Greater clearance for wheel flanges and other advantages were also realized, he said.

Other changes were made to bring the bar web in as close to the rail web as possible to reduce bolt breakage, and to make the web of the bar as thin as practicable. The purpose of the latter change, said Mr. Magee, was to secure "springiness" in the vertical direction in order to add to the reactance of the spring washers and to assist in maintaining bolt tension as fishing wear occurs.

Safety and Mechanization

"A good safety record is the result of the team work of everyone concerned, from top management down through the ranks to the lowest paid employee on the payroll," said Mr. Carpenter in his address before the joint session on Tuesday afternoon on Safety Problems as Affected by Diesel Operation and Increased Mechanization of Maintenance Work.

After stating that, in his opinion, "it can be clearly shown that the reduction of killed and injured employees pays in a cold calculation of dollars and cents," Mr. Carpenter went on to describe in some detail the organization and methods by means of which employees on his road are taught to work safely. Rather than experiencing any increase in accidents due to the advent of the Diesel locomotive, Mr. Carpenter said, the record had improved, the reason being that trains are more apt to arrive when they are expected, and "long aggravating waits for overdue trains are not so frequent."

The increased use of power machines has had a favorable effect on safety performance, according to Mr. Carpenter. "In fact," he said, "the more hand tools we can eliminate the better will be our safety record.

The use of power tools is just as advantageous from a safety standpoint as from a standpoint of economy or efficiency." He said, however, that there are "some new problems to be met in the increased use of power machines," and went on to refer to several of these, including the handling of fuel, assuring the integrity of the cables and slings used with cranes, the handling of machines on and off the track manually, the possibility of workers' clothing or parts of their bodies becoming engaged in moving parts of machines, and the cranking of engines.

Snow Fighting in Canada

A behind-the-scenes view of snow-fighting methods and equipment in use on the Canadian National was afforded in the address by Mr. Risk. He said that operating methods based on years of experience enabled Canadian railways to move traffic with minimum delays through periods of severe winter conditions. He attributed such success to extensive preparations, the use of proper mechanized equipment, trained personnel and close coordination among various departments.

Much of Mr. Risk's address was devoted to a listing and description of the various types of mechanized equipment in use for snow-clearing operations on the C.N.R. Such equipment includes 258 wing plows (equipped with drop-nose or flanger attachments); 13 rotary plows; 190 flangers; 46 Jordan spreaders; 3 crawler snow loaders; 3 Sicard snow blowers; 30 bulldozers; and 1 Barber-Greene rail-mounted snow loader and melting tank unit. The essential characteristics of each of these pieces of equipment and the part they play in the road's snow-fighting activities were described. In addition, said Mr. Risk, Diesel crawler cranes, locomotive cranes, tractors with brooms or sweeper attachments, and motor trucks of three and five tons capacity, equipped with plows, are diverted to snow clearing work as the urgency of service may require.

During the past ten years, said Mr. Risk, 6.14 cents of each dollar of the C.N.R.'s maintenance expenditure have been used for snow removal. The use of mechanized equipment, he added, has made possible a definite improvement in snow clearing methods at lower costs. "We are satisfied that greater progress is possible and will be attained through the continued study and proper application of men and machines."

Committee Reports

The six reports presented before the Roadmasters' sessions by technical committees were devoted to a range of problems facing the maintenance forces today. Abstracts of these reports follow.

Education in Costs

"It is evident that in only a few cases have railroads a consistent and effective policy or program for disseminating informatiotn as to the costs of materials, tools and equipment to the track department." This was one of the conclusions offered by the committee reporting on the Education of Track Employees in the Cost of Materials, Tools and Equipment. The chairman of this committee was E. L. Anderson, assistant chief engineer of the St. Louis-San Francisco, Springfield, Mo.

The content of this committee's report was based largely on the results of a questionnaire circulated among a number of roads to determine what steps are being taken to educate foremen or supervisors in the cost of materials and equipment. As a result of its findings the committee presented the following recommendations:

(1) That a program be inaugurated on each railroad by the highest officer in the maintenance-of-way department to educate all employees responsible for the actual use of materials, tools and equipment in the cost of these items.

(2) That this program be made interesting by eliminating long statements of dry statistics as to the costs of various items, substituting therefor periodic statements comparing the costs of principal items of materials, tools and equipment with personal items purchased by the employee with his own wages. This program should be varied from month to month and should be stressed through conferences and meetings of supervisors with their foremen and men.

(3) That the detection of any misuse of materials, tools and equipment be handled in an educational and instructive manner, and that discipline be used only as a last resort.

(4) That such a program be in charge of an officer designated by and working under the supervision of the highest officer in the maintenance-of-way department, who is familiar with all costs, the proper use of materials, the efficient use of tools, and the economical use of equipment—and that sufficient force be assigned to carry on the program systematically and efficiently. This organization should work with roadmasters and supervisors in presenting the program to the track forces.

(5) That careful selection be made in promoting foremen and in hiring laborers, endeavoring to secure men who will readily fit into an educational program.

Rail Joint Maintenance

"The maintenance of rail joints and other elements of the track structure affected by the rail joint remains one of the major items of expense of track maintenance after nearly 120 years of railroading." This was the opening sentence of the report on Reducing Rail Joint Maintenance. The report was prepared by a committee of which R. R. Manion, engineer maintenance of way of the Great Northern, St. Paul, Minn., was chairman.

Discussing design, the committee said, among other things, that 36-in. bars give substantially longer and better service than 24-in. bars, and materially increase the life of the rail. Recent tests of spring washers have developed, it said, that wear on bars and rail at joints, and necessary bolt tightening, can be reduced by the use of spring washers having a higher reactance than formerly was required.

With respect to installation, the committee referred to the need for keeping the rails ends free of dirt, grit or scale, the necessity of applying the correct lubricant, the benefits of installing joint bars correctly to avoid "cocking," the importance of obtaining uniform bolt tension when assembling the joint, the necessity of tamping up all swinging joint ties after the rail has been laid, the importance of providing uniform spaces between rail ends for expansion, and the desirability of end hardening new rail.

Points covered in a discussion of prevention maintenance included slot grinding of the joints as a means of preventing chipping of the rail ends; the retightening of the bolts periodically to compensate for wear and stretch; and the benefits of building up rail ends by welding and grinding before the amount of batter becomes serious.

Control of Vegetation

The committee reporting on Modern Methods of Controlling Vegetation and Woody Plants presented a comprehensive review of this entire subject, including mention of all the various types of control and combinations of them. A. E. Botts, assistant chief engineer of the Chesapeake & Ohio, Richmond, Va., was chairman of this committee.

Discussing the control of weeds in the roadbed, the committee listed the various methods in use for this purpose, including hand weeding, flame burners, steam weed destroyers, mowing machines, ballast diskers, and the application of oils and chemicals. Pointing out that hand methods cannot be justified with present labor costs, the committee said that the mechanical equipment used in this work has been greatly improved, but that the most notable advances have been in the field of chemicals.

In considering control methods, the committee said that sharp distinction must be made between the requirements of the right-of-way and the roadbed, pointing out that the complete and permanent removal of all forms of growth from the roadbed is desired, whereas beyond the roadbed shoulders the ideal right-of-way should have, to the exclusion of all other growth, a uniform covering of heavy sod.

In a discussion of chemicals, the committee traced the development and use of sodium arsenite and sodium chlorate, outlining the principal characteristics of each of these compounds. Then, noting that a number of new chemical compounds have been offered commercially in recent years, the committee said that one of these is the chemical known as 2,4-D. Quotations were presented by the committee from several reports giving the results of tests of 2,4-D as a means of controlling woody plants. Reference was also made in the report to another comparatively new chemical, ammonium sulfamate.

Work Equipment at Derailments

A definite relationship between the availability of some types of work equipment and the speed with which railroads are able to deal with derailments was implied by the committee reporting on the Use of Work Equipment at Derailments and in Coping with Other Emergencies. P. S. Settle, track supervisor of the Pennsylvania, Perryville, Md., was chairman of this committee. While pointing out that the development of work equipment in recent years has brought about its more extensive use at derailments, washouts, fires, and other emergencies where the track must be opened for traffic with minimum delay, the committee said that too often such use is an improvisation of the local supervision rather than a result of advance planning.

If work equipment is to be used in handling emergencies a plan for making it available is the first requisite, according to the committee. Another recommendation was that equipment frequently used for emergencies should be held in such a manner that it can be quickly transported. It is highly desirable, said the committee, that work equipment be able to move over the highway.

Described in the report was a system that has been developed by a large road for getting work equipment to the site of a derailment in min'mum time. Next the committee emphasized

the necessity of adequate communication facilities at emergencies, stating that portable telephones should be dispatched and set up at the location of trouble as soon as possible. Reference also was made to the fact that portable battery powered loud-speakers have been put to similar use during emergency operations, such as derailments and bridge fires, with considerable success. Pointing out that illumination of night work is an essential factor for safety and efficiency, the committee said that there is need for a plan to be worked out by the individual roads for using electric tie-tamping generators and bridge and building department power-tool generators as sources of power for flood lighting in emergencies.

The uses of the bulldozer at derailments and other emergencies were described in detail, after which the committee devoted some attention to other types of equipment. It said that small track-mounted self-propelled cranes of the rail-laying type are always useful where track work is to be done, that highway trucks are always available, that much can be done to improve their usefulness and availability, and that highway truck cranes, ordinarily used for off-track ditching and bridge and building department work, can be used to an advantage at emergencies.

Switches and Winter Storms

"Preparedness is the first law of snow and ice removal," said the committee on Keeping Power and Spring Switches in Operation During Winter Storms, of which A. B. Hutson, roadmaster of the Chicago, Burlington & Quincy, Galesburg, Ill., was chairman. According to this committee the trend toward centralized traffic control installations at locations of high traffic density has increased the number of power and spring switches to the point where a great deal of consideration must be given to keeping such switches operating efficiently at the lowest possible cost.

Preparations for fighting snow at power and spring switches that were emphasized by the committee included the holding of a staff meeting in the fall to go over the details of the organization; the briefing of roadmasters, track supervisors, signal supervisors and others concerned on the procedure to be followed; the use of weather forecasts in making advance preparations; the training of section foremen, maintainers and others to act promptly on their own initiative when a storm starts; the need for a good dispatching or carrying phone system as a means of keeping in contact with storm conditions; and the importance of providing efficient transportation for snow-fighting forces. The cooperation of other departments in keeping switches in operation during storms was also emphasized.

A considerable portion of the report was devoted to brief descriptions of the more common equipment and methods used in keeping switches free of snow and ice. This discussion included pertinent comments regarding particular characteristics of the various types. Other subjects discussed by the committee included the periodic inspection of all power and spring switches; the need for maintaining these switches to the highest standard; the importance of good drainage; and the necessity of doing a good clean-up job around switches after a storm.

Function of Section Gangs

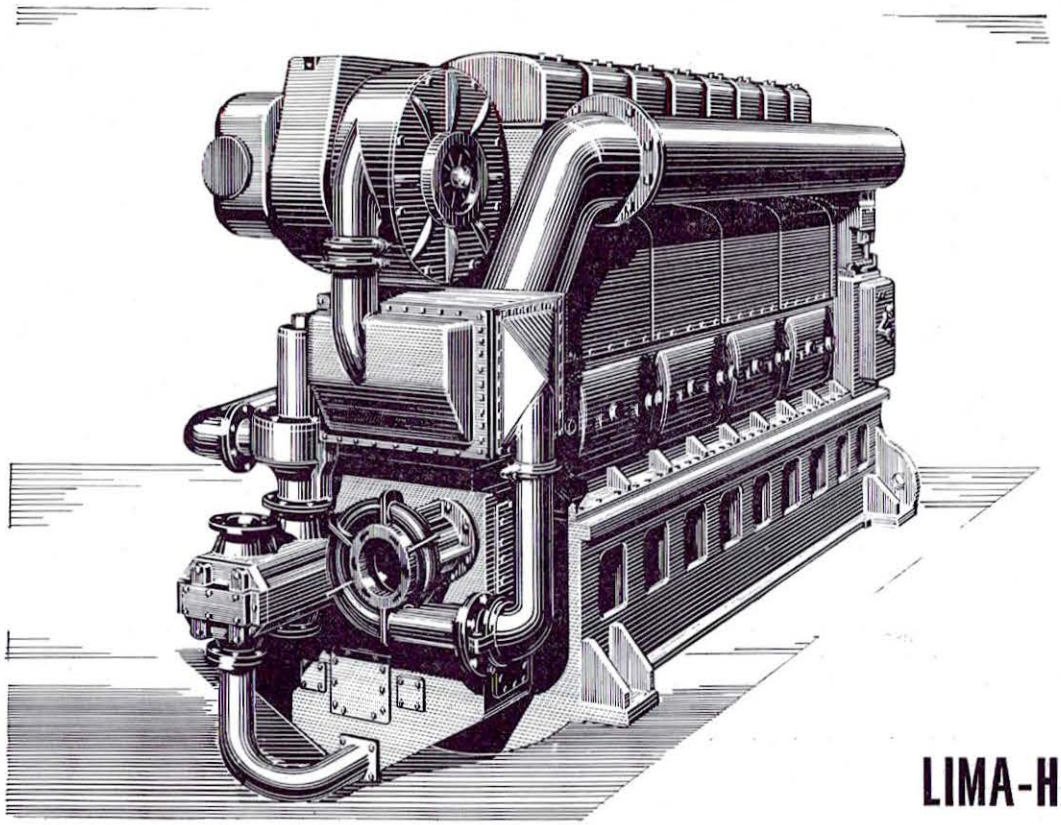
There are still many opportunities for improving the functions of present-day section gangs, according to the committee reporting on the Functions and Responsibilities of Section Gangs, of which H. C. Fox, division engineer of the Southern, Greensboro, N. C., was chairman.

"Some of these opportunities," said the committee, "include proper planning with the foreman of all section work; the scheduling of section work so foremen will know the time limits within which each job should be performed; the organizing of section work so each operation may be performed in its proper order, without unnecessary handling of material or waste of labor; and the establishment of standards so that work may be done economically and with uniform results."

After discussing various ways in which the output of section gangs may be increased, the committee expressed the opinion that if a supervisor will make a study of each section gang on his territory and will work out a method of training each of his men to do his work in the best, easiest and most economical manner, the output will increase considerably and the men will find that it is actually easier for them to do a better, more productive job.

According to the committee, it is important that consideration be given to assigning power tools to section gangs. Today, it said, power units for the operation of power tools are available which are light enough to be handled by the average section gang, and it is "surprising how much smoothing and surfacing a section gang can do with power tampers, while carrying out its many other and varied tasks."

A class in session in the new 78-ft. audio-visual railroad school car designed to give instruction to local New York Central personnel on ways of preventing freight loss and damage. The specially built steel car is now on a tour of the road's 11,000-mile system to reach freight station and yard switching personnel involved in the handling of freight and cars. Constructed in the road's own shops, the car has sleeping quarters, a kitchen and an office for the instructors who will travel with it, and an auditorium seating 54 persons. Its own Diesel generator makes it independent of outside sources of electricity and permits full use of lighting, ventilation and projection machines in remote areas of railroad yards not readily accessible to power supply. Loud-speaking facilities and various types of sound, motion and still photographic projection equipment have been installed



LIMA-HAMILTON 1,200-HP. DIESEL ENGINE

Vertical, four-cycle engine, available in six- or eight-cylinder units is designed for high working pressures, and is adaptable to locomotive, stationary and marine service

Lima-Hamilton Corporation, New York, has introduced its new Hamilton 9-in. by 12-in. Diesel engine, with ratings up to 1,200 hp., designed for extremely high working pressures. While intended particularly for application to railroad motive power, the new engine, manufactured by Lima-Hamilton at its Hooven, Owens, Rentschler Company Division at Hamilton, Ohio, is also applicable for electric power generation, mechanical power take-off, and marine propulsion and auxiliary drives. Its rating, for eight cylinders, supercharged, at sea level, is set by the manufacturer at a maximum of 1,200 hp.

A vertical, four-cycle design, the Hamilton Diesel is built in six- and eight-cylinder units, normally aspirated or supercharged. Both six- and eight-cylinder types are single acting, solid injection. Of particular interest in the Diesel design field is the intercooling provided on all supercharged models.

The cylinder heads on the new engine are cast of Meehanite with all auxiliary moving parts completely enclosed. The cylinder block is welded steel, furnace stress-relieved; liners are cast of wear-resisting iron; the pistons are forged aluminum and the crankshaft is drop-forged alloy steel. The crankshaft is mounted in nine precision main bearings. The bearing shells can be removed through crankcase inspection doors without removing the main-bearing saddles.

The overall length for the six-cylinder design is 11 ft. 2¼ in., and for the eight-cylinder design, 13 ft. 5¼ in. For both types, the overall height is 6 ft. 7¼ in.; height with clearance to remove pistons, 7 ft. 10½ in. and overall width, 4 ft. 3½ in.

The engine is mounted on a sub-base, while the generator, when used, is carried on an adapter mounted on the end of the cylinder block and sub-base. Water and lubricating-oil pumps are gear-driven from the free end of the engine, and both are mounted on a housing attached to the welded-steel cylinder block. All working parts are easily accessible through crankcase covers, especially the crank-pin bearings. The need for access covers in the oil pan is eliminated. The sub-base, on which the cylinder block and engine are mounted, extends the entire length of the block, with rigid construction for four-point suspension of the combined unit.

The engine is supercharged by a turbocharger, mounted on the free end of the engine and lubricated

from the engine lubricating-oil system. The turbocharger, designed for high specific output and for operating economy, operates at considerably elevated pressures.

Two intake and two exhaust valves, all of the same size, are located in each of the cylinder heads, and the valve gear is so arranged that cylinder heads can be tightened without removing it. Individual cylinder liners, of special wear-resistant cast iron, are designed as wet-type removable sleeves. The bottom seal between the wet-type liner and cylinder block is made by use of synthetic rubber rings. Two rings are used at the bottom seal, and a groove is machined in the liner between the two rings. This groove, in turn, is connected to a drilled passage from the outside cylinder block to indicate any leakage of the seal, and to prevent the admission of water to the engine crankcase.

To eliminate some of the troubles previously experienced in high-output Diesels, Lima-Hamilton has used jumpers between the cylinder block and cylinder head to prevent leaks developing which would permit cooling water to enter the combustion space of the engine, or, from there, drain into the crankcase. The block and liner are so constructed that cooling water passes around the liner over the entire area of the piston-ring travel.

The camshaft, mounted in the cylinder block, has bearing fits which are line bored, and the pistons, of forged aluminum, are oil-cooled, each having a total of seven rings — four compression and three oil-drain-control rings. Wrist pins, of the full-floating type, are carried on bronze bushings in the eye of the connecting rods. Lubricating oil is carried through the drilled connecting rods, then through the wrist pins, which are hollow, and on to the pistons for oil cooling.

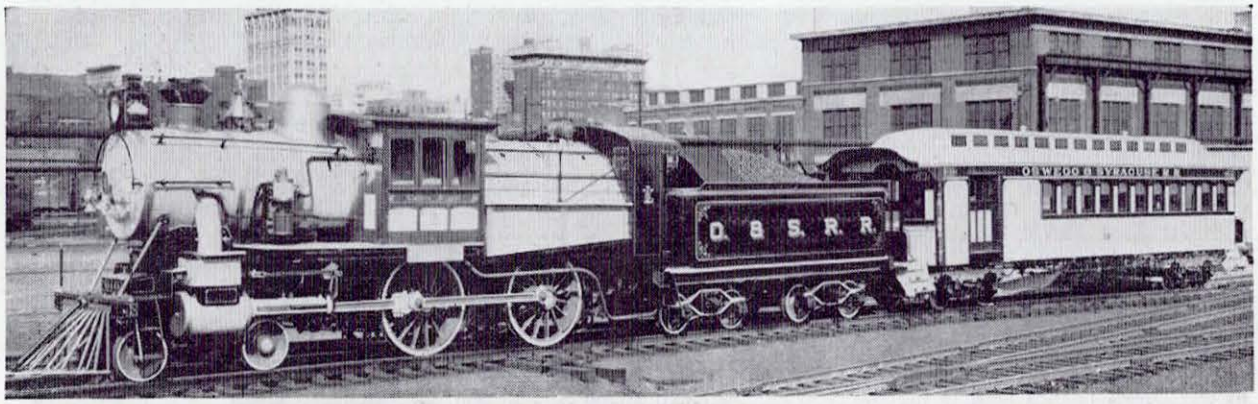
The weight of the two-piece connecting rods, of die-forged alloy steel, is carefully controlled by machining to obtain interchangeability of rods while maintaining good engine balance. The rods can be removed without the removal of the cylinder liner.

Counterweighted to eliminate internal couples and reduce engine vibration to a minimum, the crankshaft is equipped with a viscous vibration damper at the forward end. This arrangement eliminates critical speeds throughout the engine operating range. The top main crankshaft bearing caps are held in place by jack bolts and can be removed through the cylinder-block crank-pit covers. In order to remove any main bearing shells, all that is required is, first, to take off the top cap. Then, after the top half of the bearing shell is removed, the lower bearing shell can be rolled out of the main bearing saddle. The saddle, therefore, does not have to be removed at all for main bearing inspection or replacement.

Fuel pumps, also mounted on the cylinder block, are operated by tappets and rollers in the conventional manner. Fuel is pumped from the main supply tank through suitable filters and pressure regulators to the fuel-injection pump header. Here, a regulating valve maintains pressure on the header, and the excess fuel pumped by the transfer pump is discharged into the main supply tank. Leakage from the injection pump and nozzle is drained back to the main tank by gravity.

In the operation of the lubricating-oil system, the 180-g.p.m. pressure pump pumps oil from the lubricating oil tank through strainers to the engine lubricating-oil header. The scavenging pump, in the same housing, pumps oil from the engine pan through filters and oil coolers to the lubricating-oil tank. Lubricating-oil pressure gages, low-pressure alarm, and low-pressure engine shut-off fully protect the engine from lubrication failures.

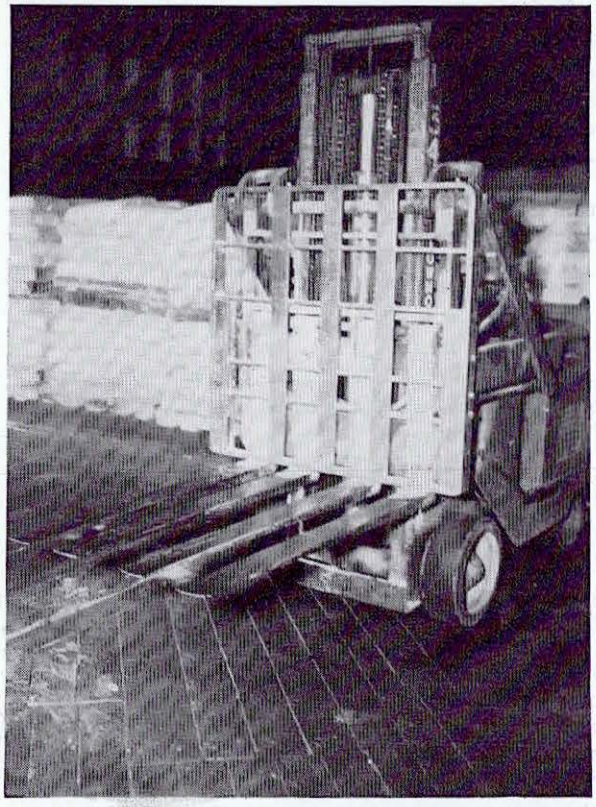
The water pump, driven by the main engine, is a 500-g.p.m. centrifugal type, and is so designed that, in case of any seal failure, water will flow into the engine room rather than back into the crankcase. The pump and driving gear can be removed from the engine as a unit for inspection, if required. In operation, water is pumped from the lubricating-oil cooler and discharged into the main-engine cooling system, and from there, first into the radiators and then back to the lubricating oil cooler. A surge tank insures a positive head on the water-pump suction, and provides room for the expansion of the cooling water. Thermometers and high-temperature water alarms protect the entire system.



Camel-back locomotive and car of the former Oswego & Syracuse Railroad (now Lackawanna) which took part in the recent centennial celebration at Oswego, New York

HANDLING TIME CUT FOR EXPORT FREIGHT

Hand-trucking gangs completely eliminated as Lackawanna mechanizes Hoboken Terminal piers

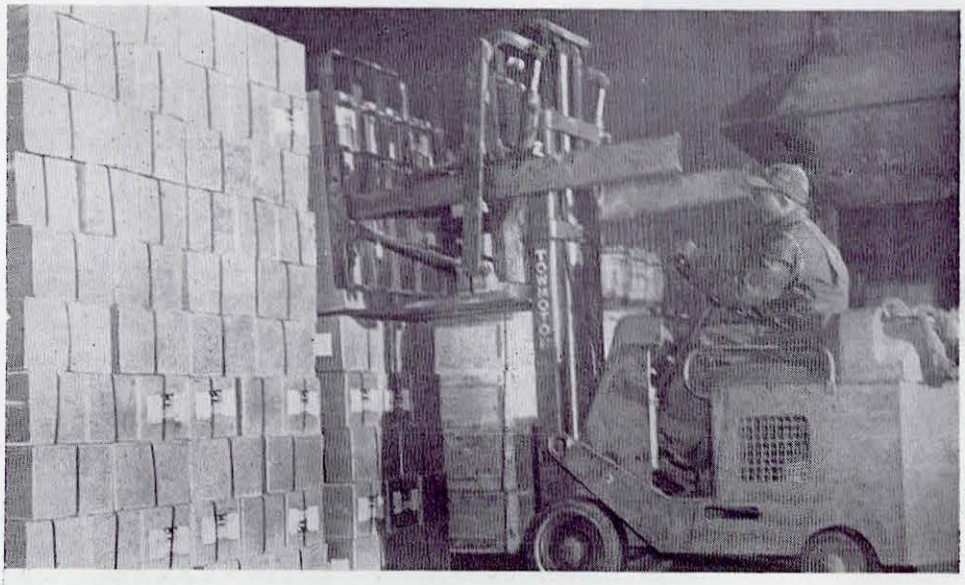


In two and one-half years the Delaware, Lackawanna & Western has increased by 44 per cent the average tons of freight handled per man per hour at its New Jersey export piers. Complete mechanization is responsible for this improvement in package freight transfer at the covered docks in Hoboken. In 1945 the combined average output of hand-trucking and fork truck-pallet gangs was 1.75 tons per man per hour, while by June of this year, with complete mechanization, the production figures had reached 2.52 tons. Both figures include the time of supervisory and auxiliary personnel in addition to that of truckers.

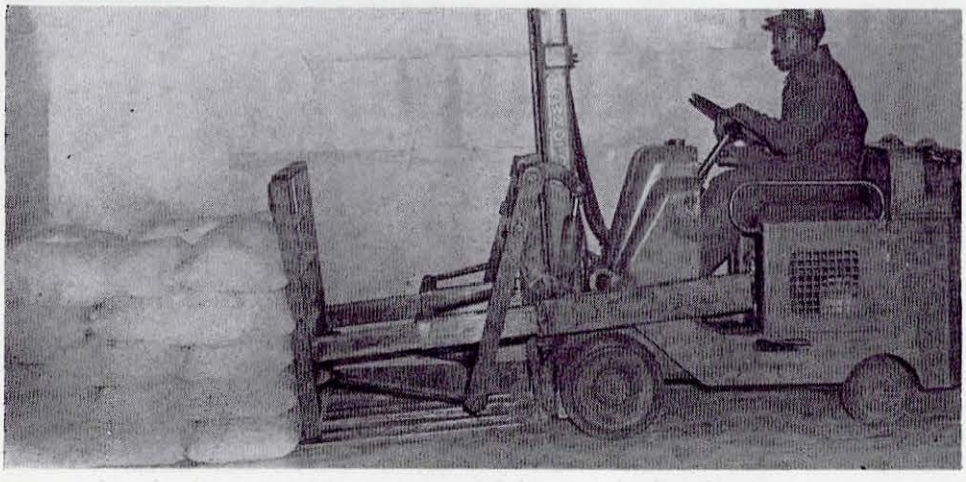
Not a little of this increase in output has resulted from the use of the take-it-or-leave-it pallet and the Towmotor Fork Lift Truck equipped with pusher device. (A take-it-or-leave-it pallet may be picked up or the load may be lifted from it without moving the pallet.) This system, as indicated in the accompanying tabulation of time studies, requires only about 30 per

Below—Flour, extreme left, and cocoa beans, extreme right, in "brickwall" type loads on take-it-or-leave-it pallets. Drums in center are on conventional pallets because they are not readily handled by pusher. Left—The truck, a 4,000-lb. capacity Towmotor, has four forks and a pusher device (drawn back to mast)

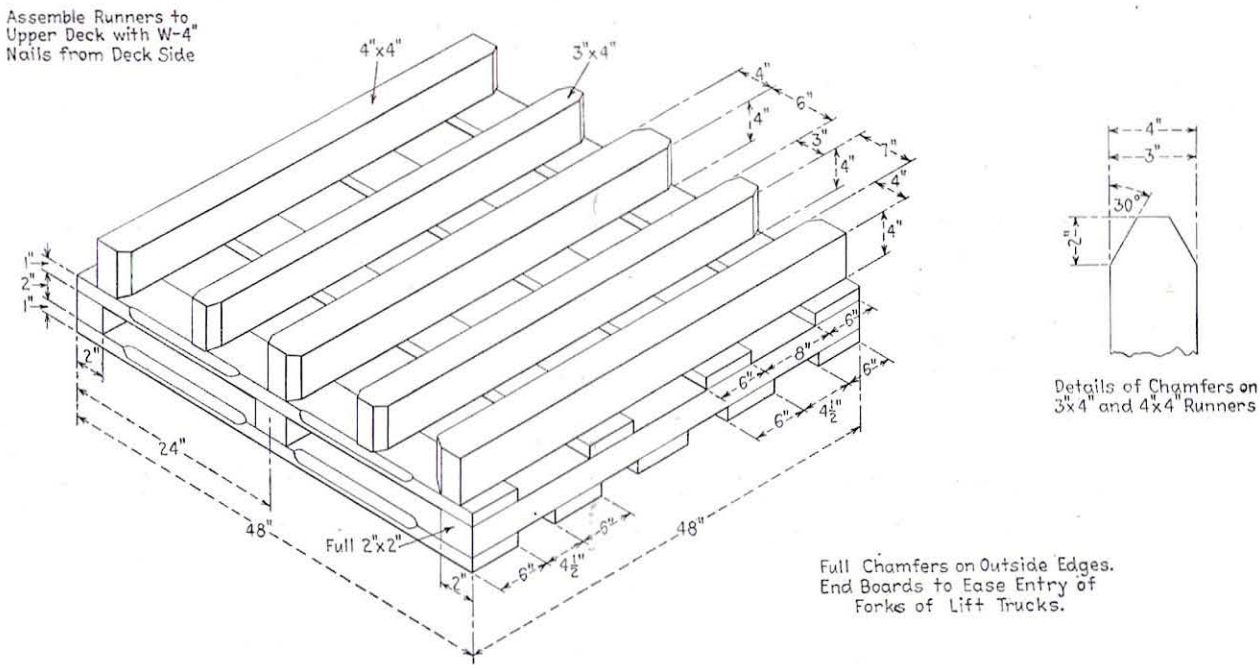
Lifting canned goods from take-it-or-leave-it pallet with runners



Pusher device placing load in lighter. The pusher really holds the load in place while truck is backed from under it



Placing sacked sugar on floor of lighter


Assemble Runners to Upper Deck with W-4" Nails from Deck Side
4"x4"
3"x4"
Full 2"x2"
24"
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Full Chamfers on Outside Edges. End Boards to Ease Entry of Forks of Lift Trucks.
Details of Chamfers on 3"x4" and 4"x4" Runners

Detail dimensions of pallet, which is made of sound hardwood and assembled with cement-coated drive screw nails

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No. 2. Sugar in sacks, pier to lighter, 2 cars, 40,000 kilos each*

Method	Man-hours	Man-hours saved	Per cent time saved
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Truck with pusher	2.0	5.4	70.3

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No. 3. Tinned horse meat in cartons, pier to lighter, 2 cars, 73,500 lb. each*

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he said, "Railway labor is not entitled to special legislation and privileges not accorded to other branches of employment."

Mr. Hill criticized the administrators of private enterprise because they have not "actively accepted the fact that their methods are under public attack," and because "they have done a poor job in awakening public understanding of our private enterprise system and in defending it against unjust attacks." He stated also that railroad management and other employers have done a poor job in public relations because they "have not made clear to the public the injustices they suffer, and how these injustices or discriminations may or do detrimentally affect the public welfare and, more specifically, those who use transportation."

Mr. Hill explained in some detail the handicaps borne by the rail carriers; namely, the determination of rates by various commissions, while wages are determined elsewhere without assurance of an adequate rate base; the failure of state commissions to recognize promptly the necessity for increased rate levels approved by the Interstate Commerce Commission, and the prosecution of the railroads by one branch of the government for compliance with the laws set by another branch of the government.

More Waybill Data

The Bureau of Transport Economics and Statistics has issued a compilation showing freight traffic and revenue averages for each of this year's first six months. The compilation is Statement No. 4830.

It is another of the bureau's waybill studies, and the data from which the averages were calculated are some of those taken from the one per cent sample of waybills submitted by Class I roads in response to the commission's September 6, 1946, order. Among the averages are the short-line ton-mile revenue figures published previously in the latest issue of the bureau's "Monthly Comment" (see *Railway Age* of September 25, page 56).

Track and B. & B. Supply Firms Exhibit at Chicago

Occupying all available space in the exhibit hall of the Stevens hotel, the third joint exhibit of the Track Supply Association and the Bridge and Building Supply Men's Association was held during the concurrent conventions of the Roadmasters' and Maintenance of Way Association and the American Railway Bridge and Building Association at Chicago, on September 20-22. With 93 companies* participating, the exhibit consisted of an attractive and effective display of materials, devices and services offered for use in the construction and maintenance of railway tracks and structures.

The officers of the Track Supply Association who were responsible for the planning and conduct of the track portion of the exhibit were: president J. B. Templeton, Templeton, Kenley & Co., Chicago; first vice-president, Kenneth Cavins, Fairmont Railway Motors, Inc., Chicago; second vice-president, R. W. Torbet, Oxweld Railroad Service Company, Chicago; and secretary-treasurer, Lewis Thomas, Q & C Co., Chicago. Directors of the association were: A. B. Chaney, assistant engineer maintenance of way, Missouri Pacific, St. Louis, Mo. (honorary); H. M. McFarlane, O. F. Jordan Company, East Chicago, Ind. (ex-officio); W. A. Maxwell, American Brake Shoe Company, Ramapo Ajax division, Chicago; W. A. Enstrom, Pettibone Mulliken Corporation, Chicago; S. W. Hickey, *Railway Age*, Chicago; W. A. Peck, the Rails Company, Chicago; and S. P. Murphy, Sperry Rail Service, Chicago. Mr. Thomas acted as director of exhibits for both associations.

The officers of the Bridge and Building Supply Men's Association who arranged for the exhibits of the members of their association were: president, Howard Mull, Warren Tool Corporation, Chicago; vice-president, G. R. Betts, Armco Drainage & Metal Products, Inc., Chicago; treasurer, S. W. Hickey, Chicago; secretary, E. C. Gunther, Duff-Norton Manufacturing Company, Chicago. Directors were: W. Lyle McDaniel, Massey Concrete Products Company, Chicago (honorary); C. E. Croisant, the Lehon Company, Chicago; R. W. Torbert; R. R. Clegg, American Lumber & Treating Co., Chicago; H. R. Duebel, Chicago Pneumatic Tool Company, Chicago; and L. R. Robinson.

Both of these associations held their annual meeting on Wednesday, September 22. In the election of officers of the Track Supply Association, Mr. Cavins was advanced to president and Mr. Torbert to first vice-president; Mr. Peck was transferred to second vice-president, and Mr. Thomas was re-elected secretary-treasurer. New directors elected for a term of two years are: A. J. Reading, Chipman Chemical Company, Chicago; W. B. Blix, Nordberg Manufacturing Company, Milwaukee, Wis.; and R. W. J. Harris, the Rail Joint Company, Chicago. S. P. Murphy, Sperry Rail Service, Chicago, was elected a director to serve for one year, and Mr. Templeton becomes a director ex-officio.

In the election of officers of the Bridge and Building Supply Men's Association, Mr. Betts became president; Mr. Hickey was elected vice-president; Mr. Gunther was re-elected secretary; and Mr. Clegg was elected treasurer to serve in addition to his position as director. Carl Bryant, Johns-Manville Sales Corporation, New York, was elected a director.

*A complete list of the exhibitors, showing the products displayed and the names of the representatives present, was published in the September issue of Railway Engineering and Maintenance.

RAILROAD FAIR IN '49? DECISION UP TO MAJOR LOHR, PRESIDENT

Major Lenox R. Lohr, president of the successful Railroad Fair in Chicago, was empowered by the fair's board of directors last week to say whether the exposition will be held again next year. He is expected to give his yes or no about October 15, following completion of studies now being made on the feasibility of another show. Chicago newspapers and civic groups are among those urging a reopening of the fair, which had attracted 2,386,467 paid admissions through September 27. It will close on Sunday, October 3.

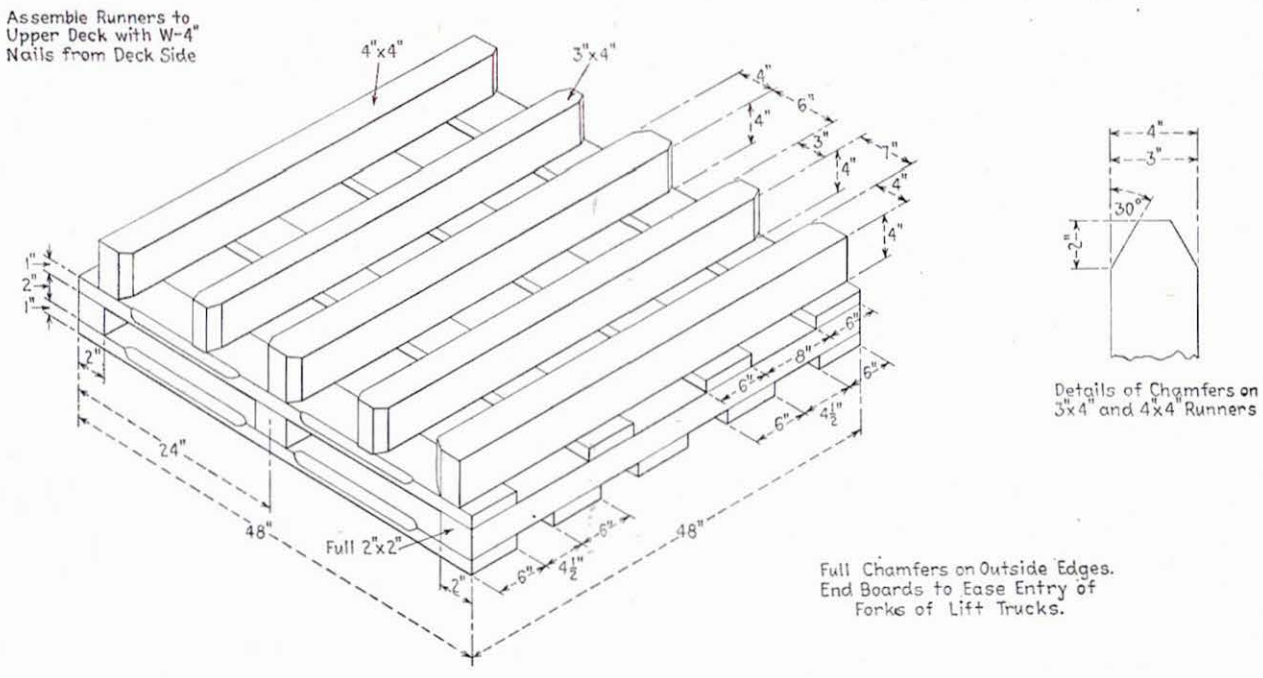
1946 Freight Revenues And Commodity Values

The Bureau of Transport Economics and Statistics of the Interstate Commerce Commission has made public the full text of its study showing the relationship between the freight revenue of Class I roads and the destination wholesale value of commodities transported by them in 1946 and the last six months of that year. The study (Statement No. 4823) was previewed in the August issue of the bureau's "Monthly Comment," as reported in the *Railway Age* of August 21, page 47.

As noted there, where the summary table was published, the figures indicate that increases in commodity prices have been outrunning freight rate increases. For the last six months of 1946, freight charges amounted to 5.36 per cent of the destination value of the commodities transported; for the full year 1946, the percentage was 5.46. These percentages were lower than those shown in the tabulation for selected previous years back to 1928.

The study is similar to those issued by the bureau at two or three-year intervals from 1928 until World War II. The latest of these previous studies was that covering the calendar year 1941, which was issued in 1943 (see *Railway Age* of June 12, 1943, page 1199). The present study was prepared by Wilma M. Dalton, economist, under the supervision of Dr. Beatrice Aitchison, statistical analyst.

The summary table is supplemented by detailed compilations showing the freight-revenue-to-value relationship for the various commodities transported. The whole range for the last half of 1946 was from 0.76 per cent for tobacco (manufactured products) to 50.7 per cent for gravel and sand (other than glass or molding). Among products of agriculture, the range was from 0.87 per cent on tobacco leaf to 45.18 per cent on straw; animals and products, from 0.9 per cent on leather to 8.22 per cent on horses, mules, ponies and asses; products of mines, from 2.4 per cent on copper ore and concentrates to the 50.7 per cent on gravel and sand (other than glass or molding); products of forests, from 2.42 per cent on crude rubber (not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GENERAL NEWS

Roads Propose Another Freight Rate Increase

Additional boost of 8 per cent sought in new plea to I. C. C.

Another general freight-rate increase of 8 per cent will be sought by the railroads in a petition which will also raise to higher levels the increases in coal, coke and iron ore rates that are proposed in the petition filed with the Interstate Commerce Commission on August 26. The new petition was scheduled to reach the commission the latter part of this week, and the prospective annual yield from the increases it will propose is estimated at $672,500,000 on the basis of anticipated 1949 traffic volume.

The decision to file it was made at a meeting of traffic executives held in Chicago last week, although the action had been forecast in the coal-iron-ore petition which advised the commission that the carriers were then "investigating and considering proposals for further increases on general traffic" (see *Railway Age* of September 4, page 52).

The new proposal is for a general increase of 8 per cent in all rates, including switching charges and charges for accessorial services. Aside from the coal, coke and iron ore, the only traffic accorded exceptional treatment would be fresh fruits and vegetables, including citrus, where the percentage increase would be subject to a maximum raise of 8 per cents per 100 lb., and lumber and sugar, where the maximum increase would be 5 cents per 100 lb.

As to coal, coke and iron ore, the increases proposed in the August 28 petition would be raised by 5 cents per net ton or 6 cents per gross ton. Thus they would become 30 cents per net ton or 34 cents per gross ton on anthracite and bituminous coal and coke, and 25 cents per ton, net or gross as rated, on iron ore. Also, the increase in iron ore rates would be extended to Western territory, except that it would not apply on movements from the Missabe range to upper Great Lakes ports for transshipment by water. As set up in the August 28 petition, the increase on iron ore would not apply in Western territory. That petition, which is docketed as No. 30052 but not yet assigned for hearing, is now expected to be superseded by the new proposal.

In outlining the latter at Chicago last week, Chairman W. H. Dana of the Western Traffic Executive Committee said that it is based on the carriers' needs at this time, and does not take into account further increases in wages or other costs. "Any further increase in railway operating costs which might result from the pending demands of the unions is a bridge that will have to be crossed when we come to it," Mr. Dana added.

If the additional 8 per cent increase should be granted by the commission, it would put freight rates approximately on the basis sought by the carriers in the Ex Parte 166 proceeding. Their proposal in that case was for an overall increase of about 30 per cent, but the commission's final report in the proceeding authorized increases amounting to an overall advance of only about 22.6 per cent (see *Railway Age* of August 7, page 25).

Tax Exemption Ruling Revoked by B.I.R.

Reverses self on air-line plan to offer levy-free commutation fares

The Bureau of Internal Revenue this week revoked its previous interpretation of the Internal Revenue Code under which air line passengers, by purchasing certain types of commutation tickets which the air lines proposed to offer for sale, would have been able to avoid payment of the 15 per cent federal tax on fares. At the time the revocation was issued, it was understood that railroads also were exploring the possibility of offering similar tickets.

The now-revoked interpretation had been given to Mid-Continent Airlines, which serves the southwest and midwest, and it had brought requests from several other air lines for similar rulings. The ruling was based on the bureau's interpretation of Section 3469 (b) of Subchapter C of the Internal Revenue Code which provides in part that the tax shall not apply to "amounts paid for commutation tickets for one month or less." In revoking the ruling, the bureau reversed its previous position and now holds that the commutation fares proposed by Mid-Continent would not qualify for the exemption.

The original ruling was handed down in May, following the bureau's consideration of Mid-Continent's proposal to establish, effective October 1, commutation fares between Kansas City, Mo., and Des Moines, Iowa, 174 air miles. The air line first proposed to offer non-transferable books of six written commutation tickets at a 2 per cent discount or 12 commutation tickets at a 5 per cent discount, all to be used within a 30-day period. It later amended its proposal, however, so as to sell instead blocks of four and eight coupon books, and exemption from the transportation tax under this system also was approved by the B.I.R.

In July, the B.I.R., acting on another Mid-Continent request, ruled that the air line not only could sell tax exempt commutation tickets on the same discount and time limit basis between Kansas City, Mo., and St. Louis, 225 air miles, Shreveport, La., and New Orleans, 272 air miles, and Tulsa, Okla., and Houston, Tex., 454 air miles, but also between any other pairs of cities between which Mid-Continent desired to establish such a fare structure. Such a ruling prompted Mid-Continent to file with the Civil Aeronautics Board tariffs providing for commutation fares between nine pairs of cities on its system.

Meanwhile, Capital Airlines announced this week that it will provide, effective October 15, "sky-coach" service between New York and Chicago and Pittsburgh, Pa. The new fare, Capital said, is based on a 4 cents per mile.

Pipe Line Rates O.K.; Net Not Up to 8%

I. C. C. report on further hearing ends probe launched 14 years ago

Because the 1947 operating income of pipe line common carriers was "below a return of 8 per cent," the Interstate Commerce Commission has found that those carriers' rates for the interstate transportation of crude petroleum oil are not unlawful. At the same time, however, the commission has made another finding to the effect that minimum-tender rules maintained by some pipe lines are unlawful to the extent that they require the tender of amounts in excess of 10,000 barrels of oil as a single shipment.

The commission's determinations came in its report on further hearing in No. 26570, Reduced Pipe Line Rates and Gathering Charges; and the finding that

rates producing a return below eight per cent are not unlawful is in line with the prior report's conclusions that a return on that basis is adequate but not too high for pipe line carriers. The prior report was reviewed in the *Railway Age* of January 11, 1941, page 145.

As noted there, the proceeding is the general investigation instituted by the commission in 1934 when former Secretary of Interior Ickes, in his role of administrator of the code of fair competition for the petroleum industry, urged the suspension of reduced-rate tariffs filed by the respondent carriers of crude oil by pipe line. The evidence indicated that one reason for the voluntary rate cuts was the desire of the pipe lines to effect net savings in the taxes paid by the integrated organizations of which they are parts. The commission permitted the rate cuts to become effective, but at the same time instituted the investigation.

At that time there were 35 respondents; and the prior report, finding that 21 of them were realizing earnings in excess of eight per cent, directed the 21 to show cause why an order should not be entered requiring rate adjustments calculated to reduce their earnings to that basis. That report also directed all respondents to show cause why they should not be ordered to publish rules which would fix minimum tenders at not in excess of 10,000 barrels.

The present report, by Commissioner Aitchison (who also wrote the prior report) recalls that returns to these show-cause orders included requests for further hearing, which was held December 18, 1941. Mr. Aitchison notes that this was 11 days after Pearl Harbor and the day on which the late President Roosevelt created the Office of Defense Transportation with jurisdiction extending to domestic pipe lines. He also referred to the creation in December, 1942, of the Petroleum Administration for War and the wartime demand for petroleum and new pipe line facilities to transport it. All of which created a situation wherein, as Mr. Aitchison put it, the "economic, operational, and financial facts relating to the matters put in issue in the proceeding" and the plants of the respondents were "changing in material respects," and "continued to change rapidly during the whole subsequent progress of the war."

Income, Rates Down

The report on further hearing also reveals that since the issuance of the show-cause orders, the number of respondents has been reduced to 26, "chiefly through consolidations." It proceeds to point out that the 1947 operating income of the present respondents ($35,173,416) was 44.5 per cent less that the 1935 income dealt with in the prior report, and $1,761,656 short of an eight per cent return.

Meanwhile, the commission found from a check of pipe line tariffs that the respondents have been voluntarily reducing their rates, the present basis being "more than 40 per cent" below the rates in effect December 31, 1933. "This," the report added, "is the more remarkable, as every other type of common carrier in the same period has been forced to make general increases in rates—often successive increases of material size—to cover their mounting costs of operation."

In consideration of all the circumstances disclosed by its review of the record, the commission was "not able to find that the rates, rules, regulations and practices of the respondents . . . are shown to be unlawful, other than the minimum tender rules of the seven respondents," which publish minimum tenders in excess of 10,000 barrels. Those seven are called upon to publish minimum tenders on the 10,000-barrel basis within 90 days, or advise the commission of their unwillingness to do so. In the latter event the commission will give consideration "to what order in respect thereto may be necessary and proper." The proceeding in all other respects is discontinued.

New York Embargo Lifted

The embargo against rail freight consigned to the New York metropolitan area which had to be moved by truck after it arrival in that area, which was put into effect on September 1 by the Association of American Railroads because of a strike of New York truckmen, has been completely lifted following recent settlement of the strike. The placing of the embargo was reported in *Railway Age* for September 4, page 55.

Coordinated Associations Meet in Chicago

With a total registration of slightly more than 2,800 members and guests, the five member groups of the Coordinated Mechanical Associations met in a three-day convention at the Hotel Sherman. Chicago, from September 20 to 22 inclusive. It is believed that the registration establishes a record in a year in which no exhibit was held since the formation of the Allied Railway Supply Association and the Coordinated Mechanical groups. The registration of the several associations was as follows: Air Brake Association, 222 members and guests; Master Boiler Makers' Association, 275; Car Department Officers' Association, 403; Railway Fuel and Traveling Engineers' Association, 361; Locomotive Maintenance Officers' Association, 653, and Allied Railway Supply Association, 496. In addition to the above there were 400 ladies registered as guests of the associations.

Some indication of the interest in these associations is shown by the fact that the Allied Railway Supply group now has 150 member companies as compared with 126 at this time last year.

The five associations met in a joint session on Monday, September 20, at which honorary life memberships in each of the five associations were presented to Frank P. Roesch, chairman emeritus of the Coordinated Mechanical Associations, and John M. Hall, director, Bureau of Locomotive Inspection, Interstate Commerce Commission. The principal speaker at this session was J. H. Aydelott, vice-president, operations and maintenance, of the Association of American Railroads. Other speakers during the sessions were: Walter Ennis, assistant to vice-president, Chicago, Milwaukee, St. Paul & Pacific, and A. H. Gass, chairman, Car Service Division, A.A.R. both of whom addressed the Car Department Officers' Association; J. D. Loftis, chief motive power and equipment. Atlantic Coast Line, and C. M. Hitch, chief mechanical officer, Chesapeake & Ohio, who spoke before the Locomotive Maintenance Officers' Association; J. J. Brinkworth, vice-president, New York Central, who addressed the Railway Fuel & Traveling Engineers' Association; E. C. Payne, consulting engineer, Pittsburgh Consolidation Coal Company, who conducted a symposium on fuel standards at a meeting of the Railway Fuel & Traveling Engineers' Association and addressed the Master Boiler Makers' Association; O. R. Barefoot, superintendent motive power and car department, Canadian Pacific, who addressed the Master Boiler Makers' Association.

Election of Officers

At the concluding sessions of the Coordinated Associations meetings, the following officers were elected for 1948-49:

Air Brake Association.—President, R. G. Webb, superintendent air brakes, Chicago, Milwaukee, St. Paul & Pacific; first vice-president, C. E. Miller, superintendent air brakes and steam heat, New York Central; second vice-president, F. C. Wenk, superintendent air brakes, Atlantic Coast Line; third vice-president, L. A. Stanton, general air-brake instructor, Great Northern; secretary-treasurer, L. Wilcox; executive committee: D. R. Collins superintendent air brakes, Denver & Rio

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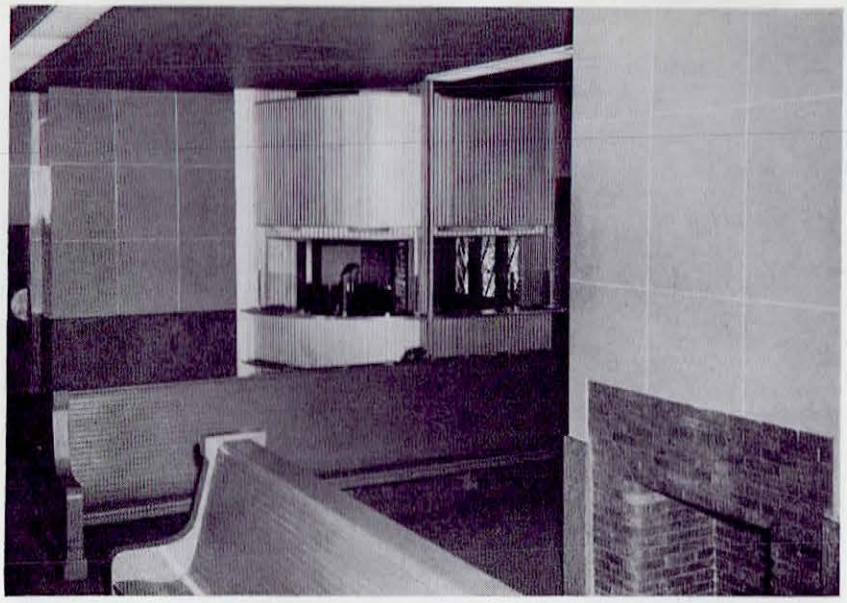
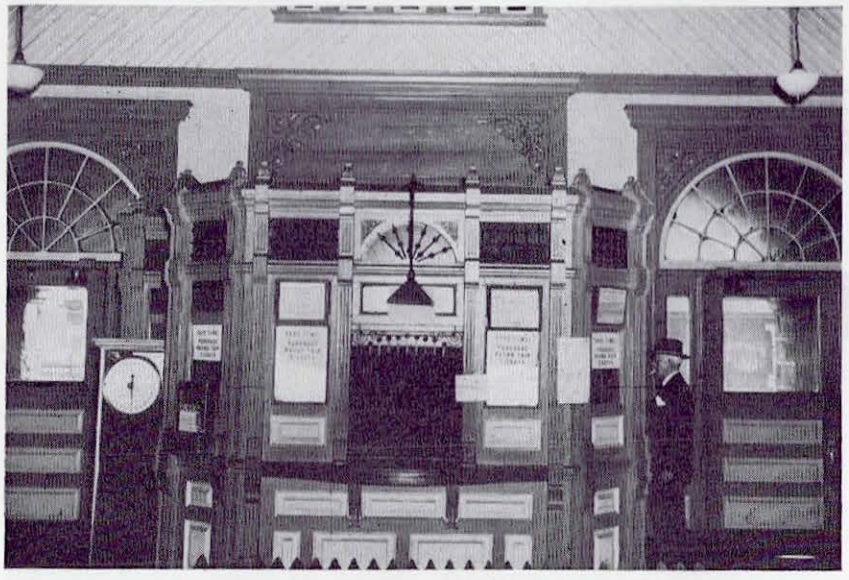
ELECTION MEMO: WALLACE WANTS SPEED-UP OF REPARATION SUITS

Henry Wallace, the Progressive party's candidate for president, last week accused Secretary of War Royall of "stalling" the government's reparation suits aimed at collection from the railroads of more than two billion dollars in alleged overcharges for the transportation of wartime freight. Speaking at Toledo, Ohio, the former cabinet member criticized Secretary Royall for having hearings in the cases postponed for "security" reasons, as reported in the *Railway Age* of September 11, page 76. He further accused the war secretary of a "terrible evasion of public duty" in so doing.



Above—A portion of the modernized interior of the Central of New Jersey's passenger station at West Eighth street, Bayonne, N. J. In the center of the illustration is the new ticket office. The design for the rehabilitated interior was formulated by Howard Ketcham. Below—The ticket office as it appeared before the station interior was restyled



Grande Western; C. C. Maynard,, chief inspector, Canadian National.

Car Department Officers' Association.—President, P. J. Hogan, supervisor car inspection and maintenance, New York, New Haven & Hartford; vice-presidents: G. H. Wells, assistant to superintendent car department, Northern Pacific; J. A. Deppe, superintendent car department, Chicago, Milwaukee, St. Paul & Pacific; J. D. Rezner, superintendent car department, Chicago, Burlington & Quincy; W. N. Messimer, superintendent equipment, Merchants Despatch Transportation Corporation; secretary-treasurer, F. H. Stremmel, assistant to secretary, Mechanical Division, A.A.R.

Master Boiler Makers' Association.—President, E. H. Heidel, general boiler inspector, Chicago, Milwaukee, St. Paul & Pacific; vice-president, E. H. Gilley, general boiler foreman, Grand Trunk; secretary-treasurer, A. F. Stiglmeier, general supervisor boilers and welding, New York Central; executive board members (for three-year terms): Chairman, E. H. Gilley, general boiler inspector, Grand Trunk; secretary, R. W. Barrett, chief boiler inspector, Canadian National; and B. G. Kantner, general boiler inspector, Reading. (For two-year term): F. R. Milligan, general boiler inspector, Canadian Pacific.

Railway Fuel and Traveling Engineers' Association.—President, G. B. Curtis, road foreman of engines, Richmond, Fredericksburg & Potomac; vice-presidents: G. E. Anderson, general fuel supervisor, Great Northern; W. E. Sample, superintendent fuel conservation, Baltimore & Ohio; W. D. Quarles, assistant chief motive power, Atlantic Coast Line; executive committee: R. H. Francis, general road foreman of equipment, St. Louis-San Francisco; F. T. McClure, supervisor air brakes, Atchison, Topeka & Santa Fe; R. D. Nicholson, road foreman of engines, New York, New Haven & Hartford; E. G. Sanders, fuel conservation engineer, Atchison, Topeka & Santa Fe.

Locomotive Maintenance Officers' Association.—President, J. W. Hawthorne, superintendent of motive power, Central of Georgia; vice-presidents, G. E. Bennett, superintendent motive power, Chicago & Eastern Illinois; P. H. Verd, superintendent motive power and equipment, Elgin, Joliet & Eastern; H. H. Magill, superintendent locomotive and car shops, Chicago & North Western; secretary-treasurer, C. M. Lipscomb, assistant to schedule supervisor, Missouri Pacific; advisory board member, T. C. Shortt, chief mechanical officer, New York, Chicago & St. Louis; executive committee (for two-year terms); E. Abraham, assistant to superintendent motive power, Elgin, Joliet & Eastern; E. J. Crawford, superintendent motive power, Chicago & North Western; W. H. Ohnesorge, superintendent of shops, Boston & Maine; (for one-year terms): A. E. Rice, chief mechanical officer, Denver & Rio Grande Western; F. R. Denney, assistant mechanical superintendent, Texas & Pacific; and J. D. Loftis, chief of motive power and equipment, Atlantic Coast Line.

Higher Loadings in Fourth Quarter Are Expected by Shippers Boards

Freight car loadings in the fourth quarter of 1948 are expected to be 1.5 per cent above those in the same period in 1947, according to estimates made by the 13 Shippers Advisory Boards.

On the basis of those estimates, freight car loadings of the 32 principal commodities will be 8,666,102 cars in the fourth quarter of 1948, compared with 8,538,665 actual car loadings for the same commodities in the corresponding period last year. All of the 13 boards, except the Ohio Valley, Northwest and the Southwest regions, estimate an increase in car loadings for the fourth quarter of 1948 as compared with the same 1947 period.

The tabulation shows actual car loadings for each district in the fourth quarter of 1947, the estimated carloadings for the fourth quarter of 1948 and the percentage of increase.

The 13 boards expect an increase in the fourth quarter of 1948, compared with the same 1947 period, in the loading of 20 of the commodities listed and a decrease in 12. Among those showing the greatest increase are the following: Agricultural implements and vehicles, other than automobiles, 13.3 per cent;

Shippers Advisory Board	Actual Loadings Fourth Quarter 1947	Estimated Loadings Fourth Quarter 1948	Per Cent Increase
New England	152,804	155,889	2.0
Atlantic States	914,385	926,437	1.3
Allegheny	1,204,404	1,219,393	1.2
Ohio Valley	1,088,258	1,073,623	1.3 Dec.
Southeast	952,395	964,193	1.2
Great Lakes	569,358	595,009	4.5
Central Western	335,557	352,692	5.1
Mid-West	1,007,147	1,025,179	1.8
Northwest	592,106	581,796	1.7 Dec.
Trans-Missouri-Kansas	453,471	460,350	1.5
Southwest	608,566	605,969	0.4 Dec.
Pacific Coast	388,165	433,274	11.6
Pacific Northwest	272,049	272,298	.09
TOTAL	8,538,665	8,666,102	1.5

cottonseed, soy bean-vegetable cake and meal, except oil, 10.7 per cent; lime and plaster, 9.9 per cent; potatoes, 9.3 per cent; gravel, sand and stone, 7.8 per cent; citrus fruits, 6.3 per cent; cement, 6 per cent; iron and steel, 5.8 per cent; salt, 5.2 per cent; other metals, 4 per cent; chemicals and explosives, 4 per cent; lumber and forest products, 3.6 per cent; brick and clay products, 3 per cent; ore and concentrates, 2.8 per cent, and cotton, 2.6 per cent.

Commodities for which decreases are estimated, and the amount of decrease, include the following: Hay, straw and alfalfa, 9.6 per cent; poultry and dairy products, 7.6 per cent; sugar syrup and molasses, 6.1 per cent; automobiles and trucks, 5 per cent; livestock, 4.9 per cent; fresh vegetables, other than potatoes, 2.9 per cent; flour, meal and other mill products, 2.5 per cent, and coal, one-tenth of one per cent.

Idaho Group Urges Termination Of Reefer Distribution System

Discontinuance of the refrigerator car distribution system of the Office of Defense Transportation is urged in a petition which the Idaho Potato & Onion Shippers Association has submitted to the Interstate Commerce Commission and the O. D. T. The association is of the opinion that full authority over the movement of reefers should be returned to the railroads and car lines.

The petitioner asserts that, since establishment of the distribution system under the O. D. T., control of reefers no longer rests with the owners of such cars. "We had no complaint with this arrangement during the war when a national critical emergency existed," the association said, "although it was far from satisfactory from a distribution and marketing standpoint. That emergency has long since passed." The petitioner holds that "ownership carriers" are in a much better position to survey their needs and distribute equipment with a minimum of delay.

Kansas Intrastate Rates

The Interstate Commerce Commission has set back from October 19 to November 15 the hearing date with respect to the investigation it has instituted into the refusal of the Corporation Commission of Kansas to authorize railroads operating within that state to apply intrastate freight rate increases in line with the increase in interstate rates authorized in Ex Parte 162 and Ex Parte 166. The hearing will be held at Topeka, Kans., before Examiner J. P. McGrath (see *Railway Age* of August 28, page 62).

E.C.A. Allocation to Aid China's Railroad Rehabilitation Program

Approval of an allocation to China in the amount of $35,000,000, part of which will be applied toward rehabilitating that country's transportation facilities, has been announced by the Economic Cooperation Administration.

The allocation includes $5,000,000 for the Canton-Hankow Railroad, described by the E. C. A. as the "backbone of transportation" in South China; $2,500,000 for the Chekiang-Kiangsi Railroad, which connects the Yangtze River delta with the Canton-Hankow line; $1,500,000 for the Peiping-Tientsin Railroad in North China; $1,500,000 for the Taiwan Railroad, which operates along the west coast of Formosa; and $1,000,000 for the Tiawan Sugar Corporation, to assist in rehabilitating plantation railways and other facilities necessary for sugar production.

J. B. Hill Asks Shippers For Better Understanding

James B. Hill, president of the Louisville & Nashville, addressing the Ohio Valley Transportation Advisory Board at Louisville, Ky., on September 22, appealed to the users of transportation to become increasingly active in influencing the public and their law-making representatives to look with more understanding and favor on the necessity of better preserving and promoting the needs of private enterprise transportation. Mr. Hill urged the adoption of a national transportation policy which would eliminate discrimination and subsidization in the transportation industry and encourage full development and coordination of all forms of transportation. He commended the research efforts begun recently by the Transportation Association of America, through national user panels, to aid the House committee on interstate commerce in the formulation of such a policy.

"For the railroads to continue successfully as private enterprise," Mr. Hill said, "they must be allowed, under economical and efficient management, to earn sufficiently on the fair value of property devoted to transportation purposes to pay a fair dividend to investors, fair wages to employees, and either to make progressive improvements from earnings, or from new capital attracted by the assurance of a fair return." On the whole, he continued, only the wage condition is being met at present.

Mr. Hill criticized the Railway Labor Act for its "failure in assuring peace in labor relations or preventing the danger of strikes," declaring that a strike to stop transportation is a direct blow at the security and welfare of the nation. "Under such conditions," Mr. Hill stated, "strikes by employees through collusive group action or conspiracy are no more defensible than if management undertook to stop operations and thereby enforce even desirable ends. A right to strike *and at the same time maintain employment advantages* is a thing entirely different from a man's individual constitutional privilege to quit work and fully sever his employment relationship." The L.&N. president further charged that the organization of supervisory officers for purposes of wage or contract terms, down through the rank of foreman, should be prohibited, since these men are responsible for the administration of supervision and discipline. Further

"WILL BE IN THERE PITCHING IN EVENT OF EMERGENCY," SAYS FARICY

As this issue went to press, on September 30, William T. Faricy, president of the Association of American Railroads, in St. Paul, Minn., as honor guest of Railroad Day in that city, was telling a breakfast press conference that in event of another national emergency the railroads "would be in there pitching as never before." The roads are making every effort to get themselves ready to handle any traffic volume that may come. Military railway units are already organized and their officer personnel selected. The railroads' greatest need is more rail—now while manpower is available to lay it—he said, and the present 10,000-car-a-month new freight car program should be stepped up to 12,000 cars a month.

St. Paul, Mr. Faricy's home town, took the A.A.R. president to its heart in a day-long series of events in recognition of the contribution which the railroads have made and are making to the economic and social life of the city and the Northwest.

A detailed report of the occasion will appear in next week's issue of *Railway Age*.

he said, "Railway labor is not entitled to special legislation and privileges not accorded to other branches of employment."

Mr. Hill criticized the administrators of private enterprise because they have not "actively accepted the fact that their methods are under public attack," and because "they have done a poor job in awakening public understanding of our private enterprise system and in defending it against unjust attacks." He stated also that railroad management and other employers have done a poor job in public relations because they "have not made clear to the public the injustices they suffer, and how these injustices or discriminations may or do detrimentally affect the public welfare and, more specifically, those who use transportation."

Mr. Hill explained in some detail the handicaps borne by the rail carriers; namely, the determination of rates by various commissions, while wages are determined elsewhere without assurance of an adequate rate base; the failure of state commissions to recognize promptly the necessity for increased rate levels approved by the Interstate Commerce Commission, and the prosecution of the railroads by one branch of the government for compliance with the laws set by another branch of the government.

More Waybill Data

The Bureau of Transport Economics and Statistics has issued a compilation showing freight traffic and revenue averages for each of this year's first six months. The compilation is Statement No. 4830.

It is another of the bureau's waybill studies, and the data from which the averages were calculated are some of those taken from the one per cent sample of waybills submitted by Class I roads in response to the commission's September 6, 1946, order. Among the averages are the short-line ton-mile revenue figures published previously in the latest issue of the bureau's "Monthly Comment" (see *Railway Age* of September 25, page 56).

Track and B. & B. Supply Firms Exhibit at Chicago

Occupying all available space in the exhibit hall of the Stevens hotel, the third joint exhibit of the Track Supply Association and the Bridge and Building Supply Men's Association was held during the concurrent conventions of the Roadmasters' and Maintenance of Way Association and the American Railway Bridge and Building Association at Chicago, on September 20-22. With 93 companies* participating, the exhibit consisted of an attractive and effective display of materials, devices and services offered for use in the construction and maintenance of railway tracks and structures.

The officers of the Track Supply Association who were responsible for the planning and conduct of the track portion of the exhibit were: president J. B. Templeton, Templeton, Kenley & Co., Chicago; first vice-president, Kenneth Cavins, Fairmont Railway Motors, Inc., Chicago; second vice-president, R. W. Torbet, Oxweld Railroad Service Company, Chicago; and secretary-treasurer, Lewis Thomas, Q & C Co., Chicago. Directors of the association were: A. B. Chaney, assistant engineer maintenance of way, Missouri Pacific, St. Louis, Mo. (honorary); H. M. McFarlane, O. F. Jordan Company, East Chicago, Ind. (ex-officio); W. A. Maxwell, American Brake Shoe Company, Ramapo Ajax division, Chicago; W. A. Enstrom, Pettibone Mulliken Corporation, Chicago; S. W. Hickey, *Railway Age*, Chicago; W. A. Peck, the Rails Company, Chicago; and S. P. Murphy, Sperry Rail Service, Chicago. Mr. Thomas acted as director of exhibits for both associations.

The officers of the Bridge and Building Supply Men's Association who arranged for the exhibits of the members of their association were: president, Howard Mull, Warren Tool Corporation, Chicago; vice-president, G. R. Betts, Armco Drainage & Metal Products, Inc., Chicago; treasurer, S. W. Hickey, Chicago; secretary, E. C. Gunther, Duff-Norton Manufacturing Company, Chicago. Directors were: W. Lyle McDaniel, Massey Concrete Products Company, Chicago (honorary); C. E. Croisant, the Lehon Company, Chicago; R. W. Torbert; R. R. Clegg, American Lumber & Treating Co., Chicago; H. R. Duebel, Chicago Pneumatic Tool Company, Chicago; and L. R. Robinson.

Both of these associations held their annual meeting on Wednesday, September 22. In the election of officers of the Track Supply Association, Mr. Cavins was advanced to president and Mr. Torbert to first vice-president; Mr. Peck was transferred to second vice-president, and Mr. Thomas was re-elected secretary-treasurer. New directors elected for a term of two years are: A. J. Reading, Chipman Chemical Company, Chicago; W. B. Blix, Nordberg Manufacturing Company, Milwaukee, Wis.; and R. W. J. Harris, the Rail Joint Company, Chicago. S. P. Murphy, Sperry Rail Service, Chicago, was elected a director to serve for one year, and Mr. Templeton becomes a director ex-officio.

In the election of officers of the Bridge and Building Supply Men's Association, Mr. Betts became president; Mr. Hickey was elected vice-president; Mr. Gunther was re-elected secretary; and Mr. Clegg was elected treasurer to serve in addition to his position as director. Carl Bryant, Johns-Manville Sales Corporation, New York, was elected a director.

*A complete list of the exhibitors, showing the products displayed and the names of the representatives present, was published in the September issue of Railway Engineering and Maintenance.

RAILROAD FAIR IN '49? DECISION UP TO MAJOR LOHR, PRESIDENT

Major Lenox R. Lohr, president of the successful Railroad Fair in Chicago, was empowered by the fair's board of directors last week to say whether the exposition will be held again next year. He is expected to give his yes or no about October 15, following completion of studies now being made on the feasibility of another show. Chicago newspapers and civic groups are among those urging a reopening of the fair, which had attracted 2,386,467 paid admissions through September 27. It will close on Sunday, October 3.

1946 Freight Revenues And Commodity Values

The Bureau of Transport Economics and Statistics of the Interstate Commerce Commission has made public the full text of its study showing the relationship between the freight revenue of Class I roads and the destination wholesale value of commodities transported by them in 1946 and the last six months of that year. The study (Statement No. 4823) was previewed in the August issue of the bureau's "Monthly Comment," as reported in the *Railway Age* of August 21, page 47.

As noted there, where the summary table was published, the figures indicate that increases in commodity prices have been outrunning freight rate increases. For the last six months of 1946, freight charges amounted to 5.36 per cent of the destination value of the commodities transported; for the full year 1946, the percentage was 5.46. These percentages were lower than those shown in the tabulation for selected previous years back to 1928.

The study is similar to those issued by the bureau at two or three-year intervals from 1928 until World War II. The latest of these previous studies was that covering the calendar year 1941, which was issued in 1943 (see *Railway Age* of June 12, 1943, page 1199). The present study was prepared by Wilma M. Dalton, economist, under the supervision of Dr. Beatrice Aitchison, statistical analyst.

The summary table is supplemented by detailed compilations showing the freight-revenue-to-value relationship for the various commodities transported. The whole range for the last half of 1946 was from 0.76 per cent for tobacco (manufactured products) to 50.7 per cent for gravel and sand (other than glass or molding). Among products of agriculture, the range was from 0.87 per cent on tobacco leaf to 45.18 per cent on straw; animals and products, from 0.9 per cent on leather to 8.22 per cent on horses, mules, ponies and asses; products of mines, from 2.4 per cent on copper ore and concentrates to the 50.7 per cent on gravel and sand (other than glass or molding); products of forests, from 2.42 per cent on crude rubber (not

reclaimed) to 20.39 per cent on posts, poles and piling; manufactures and miscellaneous, from the 0.76 per cent on tobacco (manufactured products) to 43 per cent on furnace slag.

It is pointed out that the present comparison for 1946 represents the last of this series of studies which can be based on the 157 commodity classes in use prior to 1947. The new commodity classification with its 262 commodity classes became effective January 1, 1947.

Illinois Central Fined $400

The Interstate Commerce Commission has been advised that the Illinois Central pleaded guilty in the federal district court at E. St. Louis, Ill., on September 21 to a five-count information charging it with having violated the commission's explosives regulations by placing cars placarded "explosives" too near the locomotives or occupied cabooses of its freight trains. The court fined the I. C. $400 plus costs.

Freight Car Loadings

Loadings of revenue freight in the week ended September 25 totaled 907,971 cars, the Association of American Railroads announced on September 30. This was a decrease of 1,762 cars, or 0.2 per cent, under the previous week, a decrease of 29,983 cars, or 3.2 per cent, under the corresponding week last year, and a decrease of 8,544 cars, or 0.9 per cent, under the equivalent 1946 week.

Loadings of revenue freight for the week ended September 8 totaled 909,733 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loadings

For the Week Ended Saturday, September 18 District	1948	1947	1946
Eastern	158,249	166,960	165,374
Allegheny	186,579	193,933	189,712
Pocahontas	72,144	73,119	71,094
Southern	134,141	129,582	132,201
Northwestern	149,402	154,435	142,589
Cent. Western	138,505	143,226	135,682
Southwestern	70,713	69,817	62,400
Total Western Districts	358,620	367,478	340,671
Total All Roads	909,733	931,072	899,052
Commodities:			
Grain and grain products	51,118	53,932	48,171
Livestock	16,714	19,981	19,138
Coal	179,321	184,928	189,116
Coke	14,373	13,764	14,414
Forest products	51,792	47,913	49,475
Ore	74,630	76,416	67,530
Merchandise l.c.l.	108,527	120,649	121,903
Miscellaneous	413,258	413,489	389,305
September 18	909,733	931,072	899,052
September 11	788,700	922,379	907,169
September 4	895,279	808,939	794,483
August 28	891,495	925,712	908,440
August 21	900,572	900,895	884,955
Cumulative total 38 weeks	31,105,757	32,167,718	29,501,857

In Canada.—Carloadings for the weeks ended September 11 and September 18 totaled 76,986 and 90,822 cars, respectively, as compared with 85,708 cars and 81,344 cars for the corresponding weeks last year, according to the compilation of the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
September 18, 1948	90,822	33,339
September 20, 1947	81,344	37,530
Cumulative totals for Canada:		
September 18, 1948	2,897,096	1,400,288
September 20, 1947	2,799,574	1,384,374
	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
September 11, 1948	76,986	28,859
September 13, 1947	85,708	35,489
Cumulative totals for Canada:		
September 11, 1948	2,806,331	1,366,999
September 13, 1947	2,718,230	1,346,844

Additional General News appears on pages 78 and 80.

CAR SERVICE

The Office of Defense Transportation has issued General Permit ODT 18A-Revised-28D, effective September 30, which authorizes the transportation of carload shipments of Bermuda or Spanish type onions originating at points in California, Colorado, Idaho, Nevada, Oregon, Utah, or Washington, when loaded to a weight of not less than 30,000 lb.

ORGANIZATIONS

R.B.A.'s ANNUAL DINNER TO BE HELD AT NEW YORK NOVEMBER 19

The fortieth annual dinner of the Railway Business Association will be held on November 19, at the Waldorf-Astoria Hotel in New York, with an expected attendance of approximately 1,100 persons. Presidents and other leading executives of all the principal railroads will be guests of the association. Head of the R.B.A. is P. Harvey Middleton, 38 South Dearborn street, Chicago 3.

Johnson and Faricy To Address Shippers

J. Monroe Johnson, director of the Office of Defense Transportation, and William T. Faricy, president of the Association of American Railroads, will address a luncheon sponsored jointly by the National Association of Shippers Advisory Boards and the Traffic Club of St. Louis, Mo., at the Hotel Jefferson on October 5. The business session of this 12th annual meeting of the National Association will hear addresses by 3 other A.A.R. officers: J. Carter Fort, vice-president and general counsel; James H. Aydelott, vice-president, operations and maintenance; and Arthur H. Gass, chairman, Car Service Division.

J. J. Kelley, manager of the Military Transportation Section, Car Service Division, Association of American Railroads, was elected president of the **Washington (D.C.) Chapter of the Army Transportation Association** at the chapter's annual business meeting on September 27. Mr. Kelley succeeds Brigadier General Paul F. Yount, assistant chief of transportation of the Army. Other officers elected were: first vice-president, E. F. MacMillan, assistant chief, Government Traffic Section, American Trucking Associations; second vice-president, C. M. Britt, district sales manager, Capital Air Lines; secretary, S. N. Farley, passenger representative, Western Military Bureau; treasurer, Major E. F. Waggoner, Office of Chief of Transportation of the Army.

The Delaware, Lackawanna & Western is sponsoring, in cooperation with **Railroad Enthusiasts, Inc.,** the **New York Society of Model Engineers** and the **Railroadians of America,** a rail fan camera safari to Maybrook, N. Y., on Sunday, October 17. Reservations must be purchased before October 13.

Leif Gilstad of Minneapolis, Minn., a member of the advertising agency of Batten, Barton, Durstine & Osborn, has been elected vice-president of the **Transportation Association of America,** with headquarters at Chicago. Mr. Gilstad will supervise the general management and coordination of all association activities.

The annual meeting of the **Northwest Car Men's Association,** featuring the election of officers, will be held on October 4, at 8:00 p.m., at the American House, St. Paul, Minn.

The **Eastern Car Foreman's Association** will hold its first meeting of the season on October 8, at 8:00 p.m., in room 502 of the Engineering Societies Building, 29 West 39th street, New York. R. F. Flavin, foreman in charge of the car department of the Delaware & Hudson at Binghamton, N. Y., will address the meeting on "Train Yard and Interchange Inspection of Freight Equipment."

Allan P. Kirby and Mrs. Dorothy Draper have been elected members of the advisory committee of the **Federation for Railway Progress.** Mr. Kirby is president of Alleghany Corporation and a director of the Chesapeake & Ohio. Mrs. Draper is an interior decorator presently experimenting in the field of railroad decoration. Other members of the committee are Fleet Admiral W. F. Halsey, Charles Edison, former governor of New Jersey, Philip LaFollette, former governor of Wisconsin, Mrs. Clare Booth Luce, Albert S. Goss and M. Lincoln Schuster.

SUPPLY TRADE

Ernest W. Rice and **Jack A. Stearns** have been appointed railway sales representatives of the **Esso Standard Oil Company**, with headquarters at New York. Mr. Rice was formerly associated with the Nathan Manufacturing Company and Mr. Stearns was formerly district manager of the Baldwin Locomotive Works at Birmingham, Ala.

Kenneth M. Smith, formerly president of the Lancaster Malleable & Steel Corp., Lancaster, N. Y., has joined the **National Malleable & Steel Castings Co.**, as assistant to Wilson H. Moriarty, vice-president in charge of sales.

Paul Brainard, formerly assistant supervisor of hoist design for the **Hyster Company**, has been appointed head of the newly created engineering standards department. The new division will work toward the standardization of design and materials in Hyster's three factories located in Portland, Ore., Peoria, Ill., and Danville. The company also has announced the transfer of **R. E. Stiegele**, formerly district representative in the southeastern territory, to the general sales department in Portland, to handle special sales assignments for Philip Hill, general sales manager. Mr. Stiegele will be succeeded by **W. R. Hunt**.

The **Pettibone Mulliken Corporation**, Chicago, has announced the purchase of the **Universal Engineering Corporation** of Cedar Rapids, Iowa. The latter firm has been a leading manufacturer of crushing, screening, washing and loading equipment for over 42 years.

C. P. Corrigan, formerly sales representative, has been appointed district sales manager for the Cleveland (Ohio) area of the Ramapo Ajax division of the **American Brake Shoe Company**.

The **Crucible Steel Company of America** has acquired the assets and business of the **Trent Tube Manufacturing Company** of East Troy, Wis. Trent Tube will continue under its present management, headed by **Walter H. Wiewel**, as a wholly-owned Crucible subsidiary.

O. R. Schroeder has been appointed vice-president of development and engineering of the **Weldaloy Products Company**, Detroit, Mich. Mr. Schroeder was formerly director of metallurgical research for the Great Lakes Steel Corporation.

The **Baldwin Locomotive Works** has announced the following appointments in its Eddystone division: **James R. Weaver**, as vice-president in charge of manufacturing of the division; **John S. Newton**, as vice-president in charge of engineering; and **R. Nevin Watt** as vice-president in charge of sales. Photographs of Mr. Weaver and Mr. Newton, accompanied by sketches of their careers, appeared in *Railway Age* of August 21, and a photograph of Mr. Watt, together with a sketch of his career, appeared in *Railway Age* of March 6.

Roland C. Disney, assistant to the vice-president—Eddystone division of the Baldwin Locomotive Works, has been elected vice-president and general manager of the **Whitcomb Locomotive Company**, a wholly-owned subsidiary of Baldwin.

William C. Wheeler has been appointed assistant to the chief engineer of the **St. Louis Car Company**. Mr. Wheeler began his career as an apprentice with the General Electric Company, later serving in the special test department and then in the railway motors engineering department. He was named engineer of equipment of the Chicago Surface Lines in December, 1923, and, in 1945, assistant valuation engineer. In May of the latter year he was appointed assistant to the chief engineer of the Pullman-Standard Car Manufacturing Company.

Russell T. Shafer has been appointed manager, publicity division, of the **Westinghouse Air Brake Company** to succeed **James A. Ralston**, who retired on September 1 after more than 45 years' service with the firm.

H. D. Stott, who was formerly engaged in personnel work with Montgomery Ward, has joined the car works division of the **Pullman-Standard Car Manufacturing Company** as manager of personnel at Chicago. He succeeds **H. V. Sherman**, who was recently promoted to duties in the company's general office at Chicago.

OBITUARY

William D. Otter, formerly assistant sales manager of the Electro-Motive Division of the General Motors Corporation at La Grange, Ill., died at Los Angeles, Cal., on September 3.

James F. Burns, formerly assistant manager of the Official Railway Guide, published by the National Railway Publication Company, died on September 17, after 57 years' service with the company.

Arthur M. Unger, welding engineer of the Chicago and Hammond Ind. plants of the Pullman-Standard Car Manufacturing Company, died on September 14, at the St. Francis Hospital in Blue Island, Ill., following an operation.

EQUIPMENT AND SUPPLIES

PASSENGER CARS

The **New York Central** has ordered 70 130-passenger, air-conditioned multiple-unit cars from the St. Louis Car Company, thus increasing to 100 the number of such cars it has on order from that firm (see *Railway Age* of June 5, page 84). Delivery of the cars, which are to be used in commuter service, is scheduled to begin in September, 1949. The total cost of this equipment is $9,682,200.

SIGNALING

The **New York, Chicago & St. Louis** has ordered equipment from the Union Switch & Signal Co. to complete the installation of centralized traffic control between Arcadia, Ohio, and Frankfort, Ind., approximately 186 mi., utilizing Style R2 color-light signals, Style M-22A electric switch-and-lock movements, Style SL-6A electric switch locks and the usual complement of relays, rectifiers, code equipment and housings.

Domestic Equipment Orders Reported in September

Domestic orders for 25 Diesel-electric locomotives, plus 10 additional Diesel-electric units, and 2,875 freight cars, were reported in *Railway Age* in September. No passenger car orders were reported. The estimated cost of the locomotives is $3,966,248 and the freight cars will cost an estimated $11,400,000. The orders are listed in detail in the table below.

During the first 9 months of 1948, *Railway Age* has reported domestic orders for 681 Diesel-electric locomotives,

Locomotives

Date	Purchaser	No.	Type	Builder
Sept. 4	Bangor & Aroostook	2	2,000-hp. D.-E. pass. units	Electro-Motive
		4	1,000-hp. D.-E. sw.	Electro-Motive
		8	1,500-hp. branch line units	Electro-Motive
Sept. 25	A.T. & S. F.	12	1,000-hp. D.-E. sw.	Baldwin
		9	750-hp. D.-E. sw.	Baldwin

Freight Cars

Sept. 4	P. & W. Va.	600	50-ton Hopper	Pressed Steel
Sept. 18	I.C.	1,500	50-ton Hopper	R.R. Shops
		375	50-ton Flat	R.R. Shops
Sept. 25	C.R.I. & P.	100	50-ton Gondola	R.R. Shops
Sept. 25	D.S.S. & A.	100	50-ton Box	Pullman-Standard
		100	50-ton Gondola	Pullman-Standard
Sept. 25	P. & W. Va.	100	50-ton Box	Pullman-Standard

plus 29 additional units, and 69 steam locomotives, costing an estimated $160,473,248; a total of 66,661 freight-train cars, the estimated cost of which is $262,504,700; and 362 passenger-train cars, at an estimated cost of $42,250,000.

ABANDONMENTS

Application has been filed with the Interstate Commerce Commission by:

Illinois Central.—To abandon that portion of its Silver Creek district from Silver City, Miss., to Holly Bluff, 24.7 miles. The applicant told the commission that traffic over the line has diminished to the point where operation has resulted in "substantial deficits," and that adequate motor carrier service is available in the area involved.

Division 4 of the Interstate Commerce Commission has **authorized:**

Chicago, Burlington & Quincy. — To abandon a portion of its so-called Quincy-Rockport branch extending from a point near Fall Creek, Ill., to the end of the branch at Rockport, approximately 24.5 miles. The line is being abandoned in order to permit the construction by the federal government of a flood-control project. Thereafter, the easterly portion of the Burlington's branch between East Hannibal and Fall Creek will be relocated, at government expense, to connect at a point north of Fall Creek where the abandonment is to begin. The relocation will permit the Wabash, which operates under trackage rights over the Burlington's line, to continue service between East Hannibal and Quincy.

The commission's report noted that bridges on the line to be abandoned are in need of extensive repairs and that other maintenance and rehabilitation costs must be incurred within the next few years if operation of the line is to continue. The superior benefits to be derived by the public as a result of the flood control project, the commission said, "greatly exceed" any slight inconvenience that might be occasioned by discontinuance of service on the line.

Minnesota, Dakota & Western.—To abandon operations under a trackage rights agreement over (1) that portion of a line owned by the Minnesota & Ontario Paper Co. between Little Fork, Minn., and Seymour, 0.8 mile, and (2) that portion of the Northern Pacific between Little Fork and International Falls, 16.3 miles. The Little Fork-Seymour segment will be removed, while the N.P. will continue in operation its Little Fork-International Falls line.

Staten Island Rapid Transit.—To abandon its ferry operations between Tottenville, N. Y., and Perth Amboy, N. J., approximately 0.6-mile. The ferry service will be continued, however, as the result of an agreement reached between the S.I.R.T., a subsidiary of the Baltimore & Ohio, and Sunrise Ferries, Inc.

The commission said that while there is a public need for the ferry because of the inadequacy of the present bus service to handle even a "significant number" of the passengers who would ordinarily patronize the ferry, it was also clear that the ferry could not be operated by the S.I.R.T. except with "substantial deficits." It noted that Examiner A. G. Nye had recommended in a proposed report, (see *Railway Age* of July 3, page 47), that, in order to assure continued service to the public, the commission should grant the application on the condition that the S.I.R.T. make available to a succeeding operator all or any necessary part of the property used in the ferry operations.

CONSTRUCTION

Atchison, Topeka & Santa Fe.—The Universal Construction Company, Kansas City, Mo., has been awarded a contract by this road for the erection of eight buildings in connection with a hump yard project at Argentine, Kan. The List & Clark Construction Co., Kansas City, has been engaged to perform grading and bridge work in connection with a line change at Mulhall, Okla.

Chesapeake & Ohio.—This road has awarded the following contracts, the probable costs of which are shown in parentheses: To the Virginia Engineering Company, Newport News, Va., for replacing a 6-ft. arch culvert with a double 10-ft. by 10-ft. concrete box culvert at Windsor Shades, Va. ($83,800); to R. B. Gay & Co., Roanoke, Va., and the Sutton Company, Radford, for grading and masonry on a project involving a line change to eliminate switchbacks between Claypool, W. Va., and Meadow Bridge ($1,183,000); to the Sutton Company for connecting passing tracks between Offutt, Ky., and Bobbs ($321,000); to the Hughes-Foulkrod Company, Philadelphia, Pa., for 10 additional stalls in a roundhouse at Russell, Ky. ($589,000); to Haley, Chisholm & Morris, Charlottesville, Va., for enlarging west bound receiving and classification yards and constructing an additional hump at Russell ($5,070,000); and to the Codell Construction Company, Winchester, Ky., for constructing a third main track, a 160-car setoff track and installing centralized traffic control signals between Riverton, Ky., and Limeville ($1,808,000). The following projects, for which bids will be requested, have been authorized and the probable costs are shown in parentheses: Constructing a metal shed over wheel-changing space at Russell ($40,000) and at Parsons, Ohio ($51,000).

St. Louis-San Francisco.—This road has awarded the following contracts: To the Otis Elevator Company, St. Louis, Mo., for the installation of a passenger elevator in the general office building at Springfield, Mo. ($24,619); and to the Dickie Construction Company, St. Louis, for the erection of a one-story brick office building at Lindenwood in St. Louis ($52,516).

FINANCIAL

Atchison, Topeka & Santa Fe.—*Extra Dividend.*—This road has declared an extra dividend of $2 a share on the common stock, payable on December 1 to stockholders of record on October 29.

Des Moines & Central Iowa.—*Reorganization.*—Division 4 of the Interstate Commerce Commission has approved a plan of reorganization for this road pursuant to the provisions of Section 77 of the Bankruptcy Act. Under the approved plan, the road's capitalization will be reduced from $3,572,000 (exclusive of short-term notes, all past due, of a total face amount of $378,223) to $999,950, and annual fixed-interest charges of $116,148 (exclusive of interest accruing on the short-term notes) will be eliminated. The effective date of the plan will be not later than January 1, 1949, subject to postponement by the court. The approved capitalization and annual requirements of the road are as follows:

Issue or Item	Principal Amount	Fixed Charges	Contingent Requirements
Rent for leased property		$10,200	
First-mortgage 75-year 4 per cent income bonds .	$571,400		$22,856
Sinking fund for bonds			5,714
Common stock (17,142 shares, $25 par value .	482,550		
Total	$999,950	$10,200	$28,570

The commission found the equities of the holders of the debtor's debenture bonds, unsecured notes and common stock to be valueless and made no provision for their participation in the plan. Included in the plan are provisions for the distribution of $146,850 of cash, subject to adjustment by not to exceed 30 per cent if, in the discretion of the court, the amount thereof should be increased or decreased at the date of consummation of the plan. In the distribution of this cash and the new securities, holders of the debtor's first mortgage 7½ per cent bonds will receive 10 per cent of the principal amount of their claims in cash, 40 per cent in new first mortgage, 75-year 4 per cent contingent-interest bonds and 30 per cent in new common stock, par value $25 per share.

Control of the reorganized company under the plan will rest with four bondholders—C. I. DePew, M. M. Salzberg, M. P. Gross and M. H. Snerson—who purchased from the United States Treasury the debtor's $633,500 promissory note and $795,000 of the debtor's first mortgage bonds pledged as collateral security for the note. At the

time of the hearing, these four bondholders were the owners of $1,057,000 principal amount of first mortgage bonds, or approximately 74 per cent of the outstanding issue.

The commission's findings brought a dissent from Commissioner Mitchell. He did not, however, file a separate expression.

Illinois Terminal. — *New Directors.* — Herbert W. Ward, whose election as president of this road to succeed Andrew P. Titus was reported in last week's *Railway Age*, and William M. Akin have been elected members of the I.T.'s board of directors.

New Securities

Application has been filed with the Interstate Commerce Commission by:

Central of New Jersey.—To assume liability for $1,500,000 of equipment trust certificates, proceeds of which would be applied toward the purchase of 13 1,500-hp. Diesel-electric "all purpose" locomotives from Fairbanks, Morse & Co., at an estimated unit cost of $155,107. The certificates, to be sold on the basis of competitive bidding, would be dated October 15 and mature in 15 annual installments of $100,000 starting October 15, 1949.

Texas & Northern.—To issue 5,500 shares of non-assessable common stock, par value $100 a share, proceeds of which would be applied toward the purchase from the Lone Star Steel Company of an 11-mile line from Lone Star, Tex., to a connection with the Louisiana & Arkansas at Veal's Switch (see *Railway Age* of August 21, page 71).

Virginian.—To issue $15,948,000 of series C first lien and refunding mortgage bonds, of which $9,500,000 would be issued and sold on the basis of competitive bidding. The remaining $6,448,000 of bonds would be issued nominally and pledged as collateral security for short term notes. Proceeds from the bonds to be sold would be applied toward retirement of outstanding short term bank loans—of $4,000,000 which mature within the next two years and toward restoring the applicant's working capital. The bonds would be dated October 1, with the rate of interest to be determined by competitive bidding. The maturity date and the method of determining redemption prices would be decided prior to the issuance of the bonds, the applicant said.

Division 4 of the I.C.C. has **authorized:**

New York Central.—To assume liability for $13,800,000 of equipment trust certificates, proceeds of which will be applied toward the purchase of equipment estimated to cost $19,040,000, as described in *Railway Age* of September 4, page 64. The certificates will be dated September 15 and will mature in 10 annual installments of $1,380,000, starting September 15, 1949. The report also approves a selling price of 99.261 with a 2½ per cent interest rate, the bid of Harriman, Ripley & Co. and Lehman Brothers, on which basis the average annual cost will be approximately 2.65 per cent. The certificates were reoffered to the public at prices yielding from 1.7 per cent to 2.8 per cent, according to maturity.

Average Prices Stocks and Bonds

	Sept. 29	Last week	Last year
Average price of 20 representative railway stocks	47.40	48.25	47.44
Average price of 20 representative railway bonds	88.63	88.58	87.54

Dividends Declared

Illinois Terminal—18c, quarterly, payable November 1 to holders of record October 11.

Kansas City Southern—4% preferred, $1.00, quarterly, payable October 15 to holders of record September 30.

Wheeling & Lake Erie—4% prior lien, $1.00, quarterly, payable November 1 to holders of record October 22.

RAILWAY OFFICERS

EXECUTIVE

Dennis J. Maley, assistant vice-president of the Erie at Cleveland, Ohio, retired on October 1 after more than 43 years of service.

Paul W. Johnston has been elected executive vice-president and director of the Erie at Cleveland, Ohio, as reported in the *Railway Age* of September 25. **Raymond C. Randall,** general manager, Eastern district, at Jersey City, N. J., has been elected vice-president—personnel at Cleveland, succeeding Mr. Johnston. **Howard Hale Clark,** superintendent of the Kent division at Marion, Ohio, has been appointed assistant to the vice-president at Cleveland. Mr. Johnston was born at Transfer, Pa., on July 5, 1892. He is a graduate of Allegheny College (A.B. 1914; honorary LL.D. 1946), and one

Paul W. Johnston

of its trustees. He first became associated with the Erie as a yard clerk at Shenango, Pa., in 1908 during vacation periods while attending high school and college, his first permanent job with the road starting in 1918 as relief agent at Greenville, Pa. Mr. Johnston was later appointed station supervisor and subsequently advanced to various positions in the operating department, including superintendent of transportation in 1933, assistant general manager in 1935, assistant to vice-president in 1938, general manager in 1939, and assistant vice-president in 1940. Shortly after Pearl Harbor he accepted an assignment to be in charge of all transportation problems for the United States Army in Australia; with the rank of colonel he organized a group of 17 other Erie men who enlisted for this transportation mission overseas. Mr. Johnston spent nearly four years in the South Pacific making frequent trips to the Philippines, New Guinea, India and London for conferences on lend-lease matters. During this time he was advanced to the rank of brigadier general on the official staff of General Douglas MacArthur, serving as the latter's personal representative in Australia after MacArthur moved up to the Philippines. Mr. Johnston was awarded the Distinguished Service Medal. Upon his release from

Raymond C. Randall

the Army in 1945, he returned to the Erie as vice-president in charge of personnel, which position he held until his recent election as executive vice-president and director. In the present wage and rules negotiations between the railroads and the brotherhoods, Mr. Johnston is serving as one of a committee of 15 representing all the railroads of the country.

Mr. Randall was born at DeGraff, Ohio, on September 18, 1889, and began service with the Erie in 1906 as a yard clerk at Marion. After serving as assistant yardmaster, yardmaster and general yardmaster, he became trainmaster at Chicago in 1926 and three years later was promoted to superintendent of terminals at Jersey City. Mr. Randall advanced to assistant general manager for the Western district at Youngstown, Ohio, in February, 1938, transferring to the Eastern district at Jersey City in July, 1939. He became assistant to the vice-president at Cleveland in 1939, and general manager of the Eastern district in 1941.

W. I. Rankin, vice-president and treasurer of the Piedmont & Northern and the Durham & Southern, with headquarters at Charlotte, N. C., has been elected president of these roads, succeeding the late **Frank H. Cothran**, whose death was reported in the *Railway Age* of September 11. Mr. Rankin will remain treasurer of both roads.

FINANCIAL, LEGAL and ACCOUNTING

G. L. McConnell, chief claim agent, province of Quebec, of the Canadian National, with headquarters at Montreal, Que., has been transferred to the Central region, with headquarters at Toronto, Ont., succeeding **D. F. McCraw**, who has retired.

Jerome C. Sladek, auditor of passenger receipts of the Great Northern at St. Paul, Minn., retired from that post on September 30, and has been succeeded by **Joseph C. Stoffel**, chief clerk.

OPERATING

Milton G. McInnes, assistant general manager of the Eastern district of the Erie at Jersey City, N. J., has been promoted to general manager of that district, with the same headquarters, succeeding **Raymond C. Randall**, who has been elected vice-president—personnel at Cleveland, Ohio. **Garret C. White**, superintendent of the New York division and the New Jersey & New York, at Jersey City, has been promoted to assistant general manager of the Eastern district at Jersey City. **Stanley F. McGranahan**, superintendent of the Buffalo and Rochester divisions at Buffalo, N. Y., has been transferred to the New York division at Jersey City. **Carl S. Kinback**, assistant division superintendent at Jersey City, has been promoted to superintendent of the Buffalo and Rochester divisions at Buffalo. **Robert H. Lewis**, assistant superintendent of transportation at Cleveland, has been promoted to superintendent of the Kent division at Marion, Ohio. **Anthony J. Sanok**, special representative to the vice-president—personnel, at Cleveland, has been appointed assistant superintendent of transportation at Cleveland. **Thomas J. Sanok**, trainmaster of the New York division at Jersey City, has been promoted to assistant superintendent of that division, with the same headquarters. **James W. Conway**, trainmaster of the New York division, has been appointed passenger trainmaster at Jersey City. **William M. Wiarda**, trainmaster of the Wyoming and Jefferson divisions at Dunmore, Pa., has been transferred to Jersey City. **Thomas A. Dockery**, trainmaster at Hornell, N. Y., has been transferred to the Wyoming division at Dunmore. **James G. Ainey**, inspector of operation, has been appointed trainmaster of the Susquehanna and Delaware divisions at Hornell.

Milton G. McInnes

Mr. McInnes was born at Boston, Mass., on March 17, 1905, and was graduated from Dartmouth College (A.B.1930). Entering railroad service in 1930 as a dock clerk for the Erie at New York, Mr. McInnes was appointed foreman there in 1933, becoming yardmaster at Hornell later that same year. He became inspector of operations at Cleveland in 1937; trainmaster at Youngstown later in 1937 and superintendent of the Buffalo and Rochester divisions in 1940. Mr. McInnes was appointed assistant general manager of the Western district at Youngstown in 1941 and transferred to the Eastern district at Jersey City in 1942.

Carl S. Kinback

Mr. Kinback, a native of Scranton, Pa., attended the Wharton School of Finance and entered the service of the Erie as an inventory clerk at Dunmore, Pa., in 1919, becoming chief clerk there seven months later. He advanced to transportation inspector at Cleveland in 1935, becoming inspector of operation there later the same year. Mr. Kinback was appointed trainmaster at Susquehanna, Pa., in 1936, transferring to Jersey City in 1942. He became assistant superintendent at Jersey City in 1944 and assistant superintendent of transportation at Cleveland in 1946, returning to Jersey City as assistant division superintendent in 1947.

H. F. Martin has been appointed acting superintendent of mine service of the Atlantic Coast Line, with headquarters at Mulberry, Fla.

Ernest L. Potarf, division superintendent of the Burlington Lines at Casper, Wyo., has been transferred to McCook, Neb., succeeding **W. P. Wilson**, whose appointment as general superintendent of the western district at Lincoln, Neb., was reported in the *Railway Age* of September 25. Mr. Potarf is succeeded by **J. C. Grisinger, Jr.**, assistant to general manager at Omaha, Neb., who in turn is replaced by **R. R. Gavin**, assistant superintendent at Omaha. **E. C. Ackerman**, trainmaster at Galesburg, Ill., succeeds Mr. Gavin.

John Edwards, Jr., general superintendent of transportation of the Baltimore & Ohio at Baltimore, Md., has been appointed general manager of the Central region, with headquarters at Pittsburgh, Pa., succeeding **John D. Beltz**, who retired on September 30. **P. K. Partee**, superintendent of the Baltimore division, succeeds Mr. Edwards as general superintendent of transportation at Baltimore. **J. D. Warfield**, assistant superintendent of the Baltimore division, has been appointed superintendent of the Baltimore Terminal division succeeding **W. M. Murphey**, who has been transferred to the Baltimore division. **John F. Stevens**, trainmaster, West End, Baltimore division, has been appointed assistant superintendent of the Baltimore division, succeeding Mr. Warfield. **J. A. Curtis**, trainmaster of the Monongah division, has been transferred to the Baltimore division to succeed Mr. Stevens. **F. G. Hoskins, Jr.**, assistant trainmaster of the Baltimore division, has been appointed trainmaster on the Monongah division.

John Edwards, Jr.

Mr. Edwards was born on December 4, 1889, at Mason City, W. Va., and was graduated from the Catholic University of America (B.S.1912), Washington, D.C. He entered railroad serv-

ice as a timekeeper for the Baltimore & Ohio in July, 1911, becoming a rodman in 1912. During 1914 and 1915, Mr. Edwards was a surveyor for the United States Forest Service, returning to the B. & O. in April, 1916, as a transitman and advancing to assistant supervisor at Meyersdale, Pa., in October, 1916, and to assistant division engineer at Philadelphia in July 1917. He served in the engineering corps, American Expeditionary Forces, during World War I, returning as a captain in 1919. He rejoined the B. & O. in July, 1919, as assistant division engineer, becoming assistant engineer maintenance of way and structures at Pittsburgh, Pa., in 1927; division engineer at Grafton, W. Va., in August, 1929, and assistant superintendent at Baltimore in July, 1936. Mr. Edwards was promoted to superintendent of the Monongah division at Grafton, W. Va., in May, 1937, transferring to the Cumberland (Md.) division in January, 1941, and to the Akron (Ohio) division in March, 1942. He was appointed assistant general superintendent transportation at Baltimore in January, 1946, and five months later was promoted to general superintendent transportation.

John H. Cooper, formerly general superintendent of the Northwestern division of the Pennsylvania at Chicago, whose leave of absence was reported in the *Railway Age* of July 17, retired on October 1. Mr. Cooper was born in Easton, Pa., on July 5, 1883, and was graduated by Lafayette College. He first entered Pennsylvania service in 1905 at Sunbury, Pa., serving successively as rodman, transitman, assistant supervisor and supervisor. In 1923 he was advanced to division engineer at Harrisburg, Pa., which position he also held at Uniontown, Pa., and Philadelphia. Mr. Cooper was advanced to engineer, maintenance of way, at Wilmington, Del., in 1927 and to superintendent of the Schuylkill division later in that year. He was transferred to Fort Wayne, Ind., in 1931 and went to Chicago in 1944 as general superintendent, the position from which he has retired.

D. G. Brown has been appointed acting trainmaster of the Richmond district of the Atlantic Coast Line, with headquarters at Rocky Mount, N. C.

R. N. Begien, Jr., superintendent terminals of the Chesapeake & Ohio at Chicago, has been appointed superintendent of the Hocking division, with headquarters at Columbus, Ohio, succeeding **B. R. Gould,** promoted. **F. S. Harris,** assistant superintendent at Huntington, W. Va., has been appointed superintendent terminals at Chicago, succeeding Mr. Begien. **C. C. Madison,** trainmaster at St. Albans, W. Va., has been appointed assistant superintendent at Hinton, W. Va., succeeding **P. G. Shepherd,** who has been transferred to Huntington to succeed Mr. Harris. **B. P. Knight,** assistant trainmaster at Raleigh, W. Va., has been promoted to trainmaster at St. Albans, succeeding Mr. Madison.

J. B. Drake, Jr., formerly assistant to vice-president of the Pullman Company at Philadelphia, Pa., has been appointed commissary officer at Chicago, succeeding **Lucian C. Armfield,** who retired on October 1, after 41 years of service with Pullman. **A. H. Lobeck,** district superintendent at Denver, Colo., has been appointed superintendent of the Philadelphia zone. Succeeding Mr. Lobeck at Denver is **W. E. Baptist,** assistant district superintendent at Denver. The position of assistant to vice-president at Philadelphia has been abolished.

TRAFFIC

G. W. Cleland, general agent of the Canadian Pacific at Seattle, Wash., has been appointed deputy general agent at Chicago, and **C. G. Jordan,** assistant general agent at Chicago, has been appointed general agent at Seattle. **M. B. Mulroy,** city passenger agent at Montreal, Que., has been advanced to assistant general agent at Chicago.

J. H. Sutton has been appointed assistant general freight agent of the Nashville, Chattanooga & St. Louis at Nashville, Tenn.

I. G. Hodil, assistant general agent of the St. Louis Southwestern at Pittsburgh, Pa., has been promoted to general agent at that point, succeeding **W. C. Huxhold,** who has been transferred to Chicago. Mr. Huxhold succeeds **F. W. Christopher,** who has retired following 47 years of service with the road.

The Chicago, Milwaukee, St. Paul & Pacific has announced the following changes in its traffic department: **Earl J. Hyett,** general freight agent at Chicago, advanced to assistant freight traffic manager at that point; **R. H. Harding,** assistant general freight agent at Milwaukee, Wis., promoted to assistant freight traffic manager at Chicago; **Paul Wilson,** assistant general freight agent at Seattle, Wash., appointed general freight agent at that point, the position of assistant general freight agent being abolished; **M. M. Wolverton,** general agent at Milwaukee, appointed assistant general freight agent in that city; **J. E. Marshall,** general agent, freight department, at Seattle, transferred to Milwaukee as general agent; and **L. J. Kidd,** appointed to succeed Mr. Marshall. The position of assistant to western traffic manager at Seattle has been abolished.

O. K. Rodewald, district passenger agent of the Southern at Cleveland, Ohio, has been appointed general agent, passenger department, at Detroit, Mich., succeeding **Charles D. Whitworth,** who retired on October 1, after 42 years of continuous service. **W. L. Daly,** district passenger agent at Detroit, has been transferred to Cleveland, succeeding Mr. Rodewald. **R. E. Hampton,** city ticket agent at Cincinnati, Ohio, has been promoted to district passenger agent at Detroit.

Mike Powell, general agent of the Central of Georgia at Washington, D. C., has been appointed general foreign freight agent at New York. **Frank J. Krupp,** commercial agent at New York, succeeds Mr. Powell as general agent at Washington.

H. C. Ross, assistant industrial commissioner of the Chesapeake & Ohio at Huntington, W. Va., has been promoted to industrial commissioner, with the same headquarters, succeeding **D. C. Boy,** who has retired after 25 years of service.

William F. Henry, chief of tariff bureau of the Akron, Canton & Youngstown, has been appointed assistant general freight agent, with headquarters as before at Akron, Ohio. The position of chief of tariff bureau has been abolished.

MECHANICAL

C. D. Aiken has been appointed mechanical engineer of the Richmond, Fredericksburg & Potomac, with headquarters at Richmond, Va.

J. H. Kasmeier, general foreman in the Chicago, Rock Island & Pacific's shops at Armourdale, Kan., has been appointed master mechanic of the road's Oklahoma division, with headquarters at El Reno, Okla. He succeeds **Henry J. Cosgrove,** who has retired after 48 years of service with the Rock Island.

The following changes have taken place in the mechanical department of the Chicago, Milwaukee, St. Paul & Pacific: **J. E. Bjorkholm,** superintendent of motive power at Milwaukee, Wis., has retired after 42 years of service, and the position has been abolished; **F. W. Bunce,** shop superintendent at Milwaukee, appointed mechanical superintendent—steam power; **Fay L. King,** shop superintendent at Minneapolis, Minn., appointed mechanical superintendent—Diesel and electric power, also at Milwaukee; **F. O. Fernstrom,** division master mechanic at Milwaukee, appointed assistant to mechanical superintendent—steam power, at that point; **W. A. Hotzfield,** general supervisor of Diesel service, appointed assistant to mechanical superintendent—Diesel and electric power at Milwaukee, the position of general supervisor of Diesel service being abolished; **J. L. Brossard,** formerly assistant superintendent of motive power, appointed shop superintendent at Minneapolis; and **W. W. Bates,** also formerly assistant superintendent of motive power, appointed division master mechanic at Milwaukee, with jurisdiction over the Milwaukee, Madison and Superior divisions. The positions

News Department continued on next left-hand page

She doesn't wear chrome trim, and her paint is black, but she, too, is truly modern. She was built for a job — a modern job — and she does it well.

With planned scheduling she can stay on the road 16 and 18 hours a day, 27 or 28 days a month. With proper servicing — and such servicing facilities save more than they cost — she can be turned around in an hour or two. With her modern design, based on progressive engineering, her maintenance costs are low. And with equal attention, she — the modern steam locomotive — will give you more train-miles, more ton-miles, more passenger-car miles per year for each dollar of investment than any other type of motive power.

There is a place for steam, and in this place the *modern* steam locomotive is doing an outstanding job. We are continuing to build such locomotives.

LIMA HAMILTON CORPORATION

DIVISIONS: *Lima, Ohio* — Lima Locomotive Works Division; Lima Shovel and Crane Division. *Hamilton, Ohio* — Hooven, Owens, Rentschler Co.; Niles Tool Works Co.

PRINCIPAL PRODUCTS: Locomotives; Cranes and shovels; Niles heavy machine tools; Hamilton diesel and steam engines; Hamilton heavy metal stamping presses; Hamilton-Kruse automatic can-making machinery; Special heavy machinery; Heavy iron castings; Weldments.

of assistant superintendent of motive power have been abolished. The title of assistant to superintendent of motive power held by **Walter C. Marshall,** at Milwaukee, has been changed to assistant to mechanical superintendent—Diesel and electric power.

PURCHASES and STORES

J. S. Gabriel, whose promotion to purchasing agent of the Denver & Rio Grande Western at Denver, Colo., was reported in the *Railway Age* of September 4, was born on November 21, 1890, at Spartansburg, Pa. He began his railroad career in 1908 as a store helper with the Union Pacific, and two years later he joined the Rio Grande as a laborer in the store department at Salida, Colo. Mr. Gabriel advanced

J. S. Gabriel

through successive positions to that of division storekeeper in 1918, and in the following year he went to Denver as chief clerk to the general storekeeper. He was appointed division storekeeper at Salt Lake City, Utah, in 1922, remaining in that position until his appointment in 1937 as assistant purchasing agent and general storekeeper at Denver. Mr. Gabriel has held the single title of assistant purchasing agent since 1941.

ENGINEERING and SIGNALING

The construction department and the department of way and structures of the Hudson & Manhattan have been consolidated under **Norman Conner,** superintendent of construction.

H. G. Dimond, chief draftsman of the Great Northern at St. Paul, Minn. has been appointed office engineer, succeeding **M. A. McChesney,** who has retired.

James K. Gloster, assistant engineer in the miscellaneous department of the chief engineer's office, Louisville & Nashville, at Louisville, Ky., has been advanced to division engineer at Evansville, Ind. He succeeds the late **James B. Cochran,** whose death was reported in the *Railway Age* of September 25. **Eugene R. Englert,** draftsman in the Louisville office, has been promoted to assistant engineer of the Louisville division, succeeding **R. E. McLaughlin,** who has been appointed assistant engineer in the miscellaneous department at Louisville.

Orrin C. French, formerly office engineer of the Atchison, Topeka & Santa Fe at Topeka, Kan., has been advanced to assistant signal engineer at that point, succeeding **J. C. Law,** who has gone to Amarillo, Tex., as office engineer, signal department.

V. R. Walling, assistant chief engineer of the Chicago & Western Indiana and the Belt of Chicago, at Chicago, has been advanced to chief engineer, succeeding **F. E. Morrow,** who has retired. Mr. Walling is succeeded by **A. B. Hillman,** engineer maintenance of way, who in turn is succeeded by **V. V. Holmberg,** assistant engineer.

SPECIAL

C. F. Adams, superintendent of rules and safety of the Texas & Pacific at Dallas, Tex., has been appointed superintendent of rules at that point. The positions of superintendent of rules and safety, and of train rules examiner, are abolished. **C. D. Norman** has been appointed superintendent of safety at Dallas. **E. E. Smith,** assistant to vice-president, in charge of motor transport and special service, has been appointed superintendent of special service. Mr. Smith's former position has been abolished. **O. E. Bellomy** has been given the position of superintendent of motor transport, with headquarters at Dallas.

Edwin K. St. Clair, assistant passenger trainmaster of the Long Island, has been appointed supervisor of personnel, with headquarters as before at Jamaica, N. Y.

B. C. James, assistant vice-president of the Texas & Pacific at Dallas, Tex., has been appointed director of personnel at that point, the post of assistant vice-president having been abolished.

OBITUARY

E. J. Stegner, assistant general freight agent of the Nashville, Chattanooga & St. Louis at Atlanta, Ga., died on September 11, and the position has been abolished. Mr. Stegner had been an employee of the N. C. & St. L. for 41 years.

Edgar S. McPherson, late president and general manager of the Spokane International at Spokane, Wash., whose death was reported in the *Railway Age* of September 18, began his railroad career with the Wisconsin Central (now part of the Minneapolis, St. Paul & Sault St. Marie) as an office boy in 1900. Mr. McPherson later advanced through various clerical positions to that of secretary to the president, chief clerk to the president and assistant secretary of the company. He became assistant to president of the Spokane International in 1917, and later in that year was promoted to vice-president. From 1933 to 1941 he served as trustee, general manager and traffic manager. He had held the posts of president and general manager of the railroad since October 1, 1941.

E. S. Brissey, retired general northern agent of the Tennessee Central at Chicago, died at his home in Glendale, Cal., on September 14.

F. C. Huffman, retired assistant chief engineer of the Chicago & North Western at Chicago, died at his home in Wilmette, Ill., on September 21.

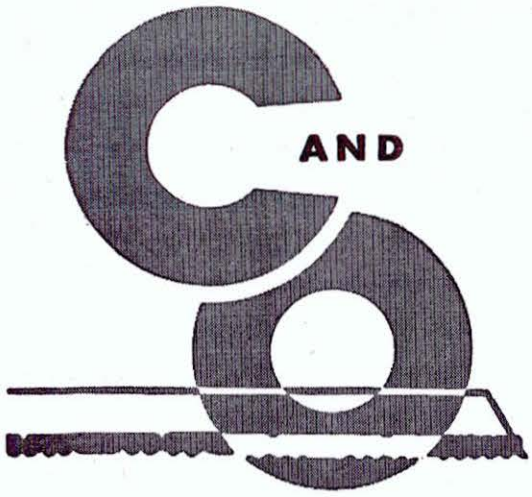
Harold L. Robertson, assistant signal engineer in charge of maintenance and construction of the Missouri Pacific Lines, at Houston, Tex., died in that city on September 15.

Frank Mulks, who retired in 1941 as assistant to the president of the Southern Pacific, died on September 18, of a heart attack, at the railroad's general hospital in San Francisco, Cal.

Alfred A. Visintainer, engineer of structures of the Erie, with headquarters at Cleveland, Ohio, died on September 27 at Hornell, N. Y., following a heart attack while on an inspection tour. Mr. Visintainer was born at Mount Carmel, Pa., on October 11, 1903, and was graduated in civil engineering from Lehigh University in 1926, immediately following which he entered railway service in the engineering department of the Erie on construction work at Youngstown, Ohio. On July 1, 1929, he was advanced to inspector and on January 1, 1939, he was promoted to construction inspector, advancing to assistant engineer in the department of structures on February 1, 1943. Mr. Visintainer became assistant engineer of structures in December, 1944, and was appointed engineer of structures in May, 1947.

George W. Lee, general agent of the Minneapolis & St. Louis at St. Paul, Minn., died on September 18 at Midway hospital, as the result of a heart attack caused by asthma.

Paul E. Odell, former vice-president and general manager of the Gulf, Mobile & Northern (now part of the Gulf, Mobile & Ohio) died in Rutland, Vt., on September 10. Mr. Odell started his railroad career about 50 years ago as a telegraph operator for the Rutland and was later connected with the Boston & Maine and the Illinois Central. He joined the G. M. & N. in 1922 as general manager and was elected vice-president and general manager in 1926, which positions he held until his retirement in 1934. Mr. Odell was one of the orginators of "South, Inc.," an organization formed to advertise and develop the resources of that territory.



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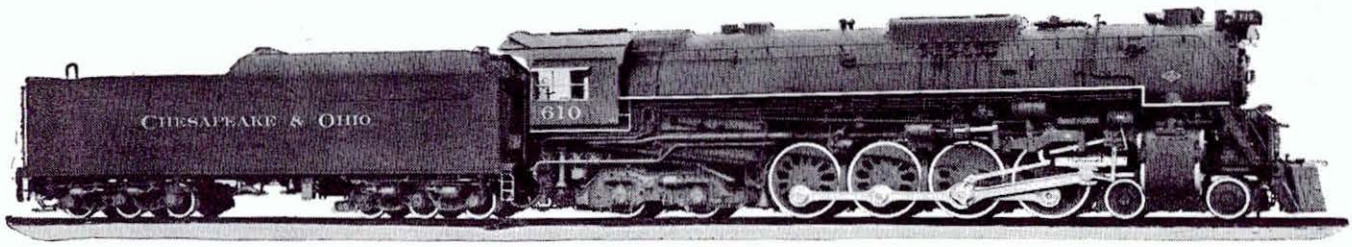
SECURITY CIRCULATORS



in its new 4-8-4 locomotives

Each of the new Class J-3 steam locomotives being placed in service by The Chesapeake and Ohio Railway Company is equipped with Security Circulators to aid the circulation of water in its boiler and improve steaming capacity.

There are also other advantages of Security Circulators that help to make possible greater locomotive utilization. Security Circulators definitely lessen honeycombing, flue plugging and cinder cutting, and prolong the life of arch brick, making the locomotive available for much longer periods of continuous operation.

SECURITY CIRCULATOR DIVISION

AMERICAN ARCH COMPANY INC.

NEW YORK • CHICAGO

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM RAILWAYS

Compiled from 127 monthly reports of revenues and expenses representing 131 Class I steam railways

(Switching and Terminal Companies Not Included)

FOR THE MONTH OF JUNE 1948 AND 1947

Item	United States		Eastern District		Southern District		Western District	
	1948	1947	1948	1947	1948	1947	1948	1947
Miles of road operated at close of month	227,151	227,452	53,689	53,737	46,131	46,162	127,331	127,553
Revenues:								
Freight	$690,837,747	$557,127,674	$266,749,595	$216,254,418	$142,359,208	$118,004,436	$281,728,944	$222,868,820
Passenger	84,251,024	84,787,997	42,054,356	43,098,227	12,172,018	12,296,621	30,024,650	29,393,149
Mail	15,246,128	11,594,924	5,281,820	4,674,321	2,942,855	2,017,915	7,021,453	4,902,688
Express	11,077,078	10,052,741	4,640,472	3,633,185	1,471,322	1,474,373	4,965,284	4,945,183
All other operating revenues	36,693,972	34,259,147	16,419,508	15,140,464	5,926,392	5,763,377	14,348,072	13,355,306
Railway operating revenues	838,105,949	697,822,483	335,145,751	282,800,615	164,871,795	139,556,722	338,088,403	275,465,146
Expenses:								
Maintenance of way and structures	122,206,329	105,753,519	46,384,615	38,504,735	24,556,032	21,742,817	51,265,682	45,505,967
Depreciation	10,382,611	10,117,292	4,416,420	4,332,789	1,805,553	1,726,605	4,160,638	4,057,898
Retirements	1,475,400	1,220,184	590,187	129,023	189,242	313,830	695,971	777,331
Deferred maintenance	*267,984	*389,567	*2,057	*16,159	*43,775	*16,341	*222,152	*357,067
Amortization of defense projects	147,355	109,450	15,049	12,180	42,896	22,842	89,410	74,428
Equalization	*2,115,317	*2,466,395	*858,519	*2,146,832	*178,281	*40,595	*1,078,517	*278,968
All other	112,584,264	97,162,555	42,223,535	36,193,734	22,740,397	19,736,476	47,620,332	41,232,345
Maintenance of equipment	139,461,144	127,087,834	59,702,731	54,112,730	29,197,182	25,886,417	50,561,231	47,088,687
Depreciation	20,667,415	19,370,143	8,255,519	7,799,555	4,586,036	4,269,312	7,825,860	7,301,276
Retirements	*58,256	*45,456	*25,896	*11,328	*17,744	*15,577	*16,616	*18,551
Deferred maintenance and major repairs	*285,154	*635,844	.....	.....	*126,094	*419,582	*159,060	*216,262
Amortization of defense projects	1,224,323	1,247,786	452,386	458,896	238,926	257,212	533,011	531,678
Equalization	328,886	*565,839	59,243	*167,830	301,122	*341,024	*31,479	*56,985
All other	117,583,930	107,717,044	50,959,479	46,033,437	24,214,936	22,136,076	42,409,515	39,547,531
Traffic	15,952,029	14,222,607	5,636,198	4,858,519	3,411,562	3,080,454	6,904,269	6,283,634
Transportation—Rail line	314,888,820	272,853,352	131,757,002	117,243,277	58,016,063	50,312,136	125,115,755	105,297,939
Miscellaneous operations	10,907,356	10,443,261	4,146,508	3,946,088	1,492,153	1,371,012	5,268,695	5,126,161
General	22,664,134	19,992,669	8,589,535	7,807,563	4,957,082	4,472,853	9,117,517	7,712,253
Railway operating expenses	626,079,812	550,353,242	226,472,912	226,216,912	121,630,074	106,865,689	248,233,149	217,014,641
Net revenue from railway operations	212,026,137	147,469,241	78,929,162	56,327,703	43,241,721	32,691,033	89,855,254	58,450,505
Railway tax accruals	72,890,939	72,201,217	21,882,184	26,060,120	18,492,979	17,223,020	32,315,776	28,918,077
Pay-roll taxes	*7,896,885	28,875,962	*6,591,247	12,064,179	75,874	5,578,334	*1,381,512	11,233,449
Federal income taxes	52,257,235	20,167,672	16,816,225	5,064,373	12,875,602	6,939,950	22,565,408	8,163,349
All other taxes	28,330,589	23,157,583	11,657,206	8,931,568	5,541,503	4,704,736	11,131,880	9,521,279
Railway operating income	139,335,198	75,268,024	57,046,978	30,267,583	24,748,742	15,468,013	57,539,478	29,532,428
Equipment rents—Dr. balance	11,341,273	10,826,017	5,137,291	4,602,952	*1,822,563	*367,349	8,026,545	6,590,414
Joint facility rent—Dr. balance	3,014,862	3,192,917	1,411,598	1,535,268	451,479	477,521	1,151,785	1,180,128
Net railway operating income	124,979,063	61,249,090	50,498,089	24,129,363	26,119,826	15,357,841	48,361,148	21,761,886
Ratio of expenses to revenues (per cent)	74.7	78.9	76.4	80.1	73.8	76.6	73.4	78.8

FOR THE SIX MONTHS ENDED JUNE 1948 AND 1947

Item	United States		Eastern District		Southern District		Western District	
	1948	1947	1948	1947	1948	1947	1948	1947
Miles of road operated at close of month	227,213	227,517	53,697	53,732	46,157	46,204	127,359	127,581
Revenues:								
Freight	$3,804,798,713	$3,376,177,405	$1,467,446,843	$1,299,567,147	$802,629,098	$728,694,158	$1,534,722,772	$1,347,916,100
Passenger	452,887,917	457,184,735	229,332,473	227,133,648	74,370,280	77,396,560	149,185,164	152,654,527
Mail	91,411,221	69,365,610	32,377,048	26,753,756	16,762,143	12,293,852	42,272,030	30,318,002
Express	59,535,732	60,961,494	20,274,904	19,442,722	10,703,711	11,885,206	28,557,117	29,633,566
All other operating revenues	198,085,673	190,377,088	88,256,665	84,846,395	33,661,194	32,959,063	76,167,814	72,571,630
Railway operating revenues	4,606,719,256	4,154,066,332	1,837,687,933	1,657,743,668	938,126,426	863,228,839	1,830,904,897	1,633,093,825
Expenses:								
Maintenance of way and structures	644,706,776	569,240,983	235,869,568	203,587,828	136,795,735	127,343,413	272,041,473	238,309,742
Depreciation	61,981,790	60,745,899	26,332,900	25,989,991	10,762,021	10,389,713	24,886,869	24,366,195
Retirements	5,517,550	3,883,727	1,491,747	779,000	621,026	938,203	3,404,777	2,166,524
Deferred maintenance	*2,207,366	*2,134,048	*68,240	*169,187	*732,116	*145,122	*1,407,010	*1,819,739
Amortization of defense projects	1,125,195	626,563	77,379	49,897	261,850	181,916	785,966	394,750
Equalization	4,050,683	7,270,664	2,329,429	3,430,851	1,631,050	1,796,693	90,204	2,043,120
All other	574,238,924	498,848,178	205,706,353	173,507,276	124,251,904	114,182,010	244,280,667	211,158,892
Maintenance of equipment	830,211,582	757,386,429	354,436,426	326,206,791	167,820,330	154,098,289	307,954,826	277,081,349
Depreciation	121,694,726	114,561,556	48,020,019	46,317,906	27,016,464	25,041,386	46,658,243	43,202,264
Retirements	*664,944	*206,953	*68,995	*36,671	*130,297	*64,870	*465,652	*105,412
Deferred maintenance and major repairs	*2,185,309	*2,564,935	.....	*2,840	*622,237	*1,118,594	*1,563,072	*1,443,501
Amortization of defense projects	7,398,908	7,499,841	2,712,935	2,794,371	1,433,737	1,505,232	3,252,236	3,200,238
Equalization	2,378,309	930,044	477,073	*120,667	1,964,027	1,017,390	*62,791	33,321
All other	701,589,892	637,166,876	303,295,394	277,254,692	138,158,636	127,717,745	260,135,862	232,194,439
Traffic	95,209,816	85,096,291	32,253,297	29,368,252	21,055,828	18,253,034	41,900,691	37,475,005
Transportation—Rail line	1,880,179,666	1,657,789,489	803,296,620	724,750,084	352,192,857	312,946,532	724,690,189	620,092,873
Miscellaneous operations	64,148,789	61,423,462	24,489,906	22,953,619	9,969,985	9,458,418	29,688,898	29,011,425
General	134,450,463	188,750,807	51,437,884	45,942,877	29,206,171	25,889,596	53,746,408	46,918,334
Railway operating expenses	3,648,907,092	3,249,687,461	1,501,783,701	1,352,809,451	717,100,906	647,989,282	1,430,022,485	1,248,888,728
Net revenue from railway operations	957,812,164	904,378,871	335,904,232	304,934,217	221,025,520	215,239,557	400,882,412	384,205,097
Railway tax accruals	461,205,853	448,841,796	164,996,631	154,616,648	111,124,103	109,390,887	185,085,119	184,834,261
Pay-roll taxes	[2]134,955,071	169,905,738	55,791,465	71,180,027	28,358,586	33,503,933	50,805,020	65,221,778
Federal income taxes[1]	171,907,029	141,627,795	50,525,198	30,513,987	50,500,651	47,036,738	70,881,180	64,077,070
All other taxes	154,343,753	137,308,263	58,679,968	52,922,634	32,264,866	28,850,216	63,398,919	55,535,413
Railway operating income	496,606,311	455,537,075	170,907,601	150,317,569	109,901,417	105,848,670	215,797,293	199,370,836
Equipment rents—Dr. balance	65,610,421	61,113,853	31,416,979	29,869,081	*5,509,890	*1,745,506	39,703,332	32,990,278
Joint facility rent—Dr. balance	20,056,970	20,652,156	9,539,768	10,009,163	3,027,627	3,193,972	7,489,575	7,449,021
Net railway operating income	410,938,920	373,771,066	129,950,854	110,439,325	112,383,680	104,400,204	168,604,386	158,931,537
Ratio of expenses to revenues (per cent)	79.2	78.2	81.7	81.6	76.4	75.1	78.1	76.5

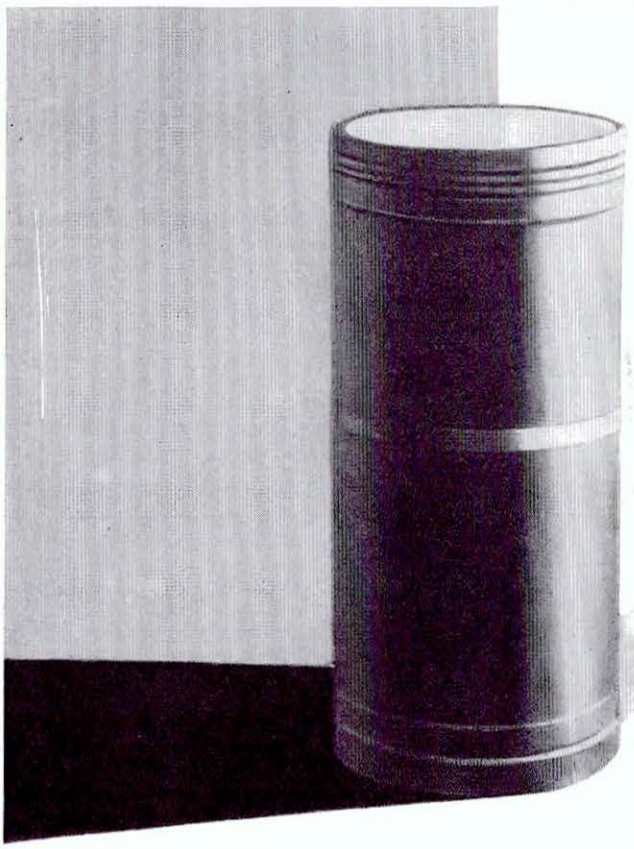
[1]Includes income tax and surtax.

[2]Includes credits amounting to $35,794,356 for reduction in unemployment insurance from 3.0 per cent to 0.5 per cent retroactive to January 1, 1948.

*Decrease, deficit, or other reverse item.

Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to Revision.

HSGI DIESEL LINERS



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General News

(*Continued from page 67*)

C. of N. J. Opens Restyled Passenger Station in Bayonne

The Central of New Jersey's passenger station at West Eighth street, Bayonne, N. J., the interior of which has been restyled, was formally opened on September 15 during ceremonies attended by city officials and civic leaders. E. T. Moore, chief executive officer of the road, pointed out that restyling the station interior, which cost approximately $32,500, was one of several projects undertaken within the past two years at Bayonne. Other projects, he said, included rebuilding of bridges over Broadway and Linnett street, renewal of bridge floor at East 32nd street and relocation of grade crossing at East 49th street to eliminate a hazardous condition. All the Bayonne improvements, he added, have cost the road over $500,000.

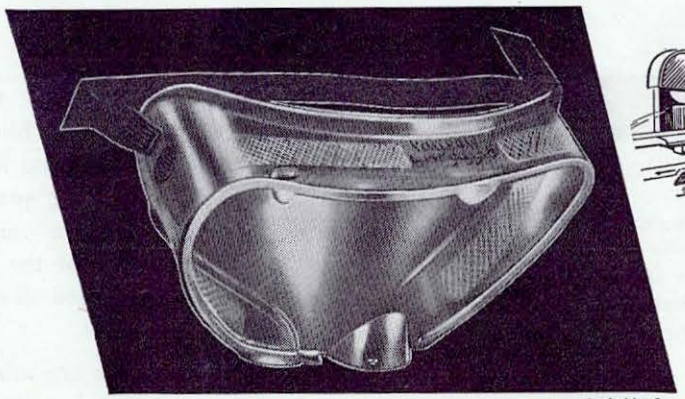
"This restyled station," Mr. Moore continued, "is modern in every detail and will serve as a pattern for the 'new look' treatment of the interiors of other important commuter stations." The station has been provided with vitreous enamelled walls, an acoustical tile ceiling of blue and gray, and magnesite terrazzo flooring in red and gray. New fixtures, in beige, green and tan, have been installed in the enlarged washrooms. Concealed fluorescent lights and special insulation are provided in the waiting room. The ticket office, moved to a location nearer the street entrance, is enclosed in corrugated aluminum. The improvements, Mr. Moore said, simplify maintenance and make possible a cleaner station at less cost.

Wood Preservers Enlarge Staff

The American Wood-Preservers' Association, Washington, D. C., has announced the appointment of an assistant secretary to help direct activities of the association, which now has 1,200 members. He is William A. Penrose, a Washington attorney associated with the industry since 1926. H. L. Dawson will continue as secretary-treasurer.

Average Percentage Increases Authorized in Ex Parte 166

The Bureau of Transport Economics and Statistics of the Interstate Commerce Commission has made public its recently-compiled statement showing estimates of the average percentage increases in freight rates authorized by the commission in the Ex Parte No. 166 case. The compilation, Statement No. 4832, was previewed in the latest issue of the bureau's "Monthly Comment" (see *Railway Age* of September 25, page 56).



Style No. 1

TWO NEW MONOGOGGLES for Show Window Vision

New, deeply cupped styles have ample room for wearing prescription glasses in comfort. The flat style provides added clearance for molded spectacle frames. Large, one-piece, plastic lens in new drop-eye shape provides wider vision. Frames are of clear acetate or flexible, mottled-brown polythene. Their lightweight and excellent impact resistance give workers all-day comfort and ample eye protection on a variety of hazardous operations.

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GENERAL ELECTRIC

The overall percentage increase is shown at 22.3, and the detailed figures show that the ranges of authorized increases within the various commodity groups were as follows: Products of Agriculture, from 13.2 per cent on lettuce to 26.7 per cent on malt, n.o.s.; animals and products, from 21.9 per cent on sheep and goats to 28.4 per cent on leather, n.o.s.; products of mines, from 7.4 per cent on aluminum, lead and zinc ores and concentrates to 29.4 per cent on fluxing stone and raw dolomite; products of forests, from 21.4 per cent on fuel wood to 25.7 per cent on products of forests, n.o.s.; manufactures and miscellaneous, from 15.9 per cent on common brick to 28.6 per cent on iron and steel (billet, bloom and ingot); forwarder traffic, 24.6 per cent; all l. c. l. freight, 25 per cent.

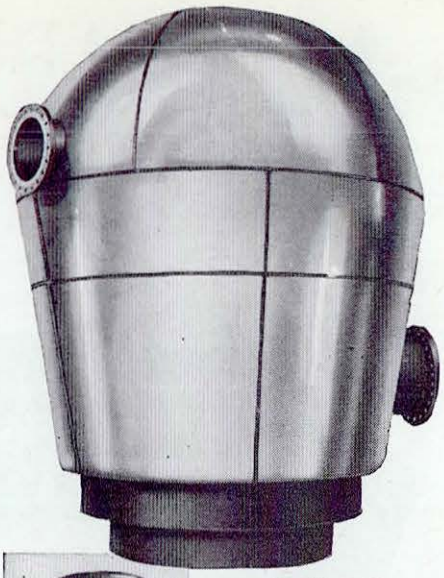
The statement says that caution should be used in interpreting the percentages because: The increases are estimates made from basic material which was limited as to detail; the percentage estimates are subject to greater error the smaller the class to which they apply; it was not possible to take into account by commodities the extra five per cent above the general western territory increase which was authorized within Zone 1 of Western Trunk Line Territory; the percentage figures are averages for the United States of increases which were not uniform in all regions; and the data cover only Class I roads, but include all traffic of such roads and thus assume intrastate as well as interstate increases.

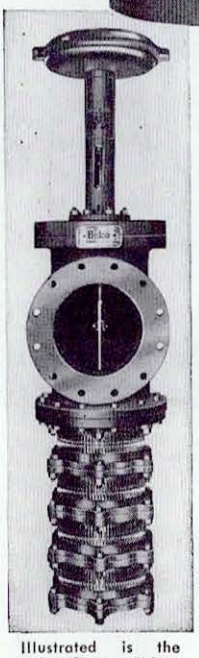
Credit—Map of Early Chicago Railroads

The map showing railroads entering Chicago in the period up to 1868, which heads part II of the article "One Hundred Year's Development of Railways in the Chicago Area" appearing in *Railway Age* of September 18, page 58, was drawn especially for the "Service Bulletin" of the Public Service Corporation of Northern Illinois, and made available, in a slightly revised form, to this paper for reproduction. Credit was inadvertently omitted.

Gass Sees Improvement In Gondola Car Supply

Despite a substantial shortage of cars for the loading of coal, everyone needing that commodity, whether for industrial or household purposes, has been able to get it, Arthur H. Gass, chairman of the Car Service Division of the Association of American Railroads, told the 59th regular meeting of the Alleghany Regional Advisory Board held in Pittsburgh, Pa., on September 23. The present peak iron and steel production, coupled with increased road building and construction activities, have sorely taxed the supply of gondola cars, he said, adding, however, that the situation is not as serious as last year and that "tomorrow will be better."





Illustrated is the Belco Deaerating Heater Steam Dome and pressure compensating spray valve.

BELCO DEAERATING HEATER

This new Belco Deaerating Heater accomplishes both heating and complete deaerating in a few seconds time. The spray valve fills the stainless steel dome with a cloud of droplets which are contact heated and degasified by the inrushing steam. Intermingling of steam and water also drives out a portion of the CO_2 held in the bicarbonates.

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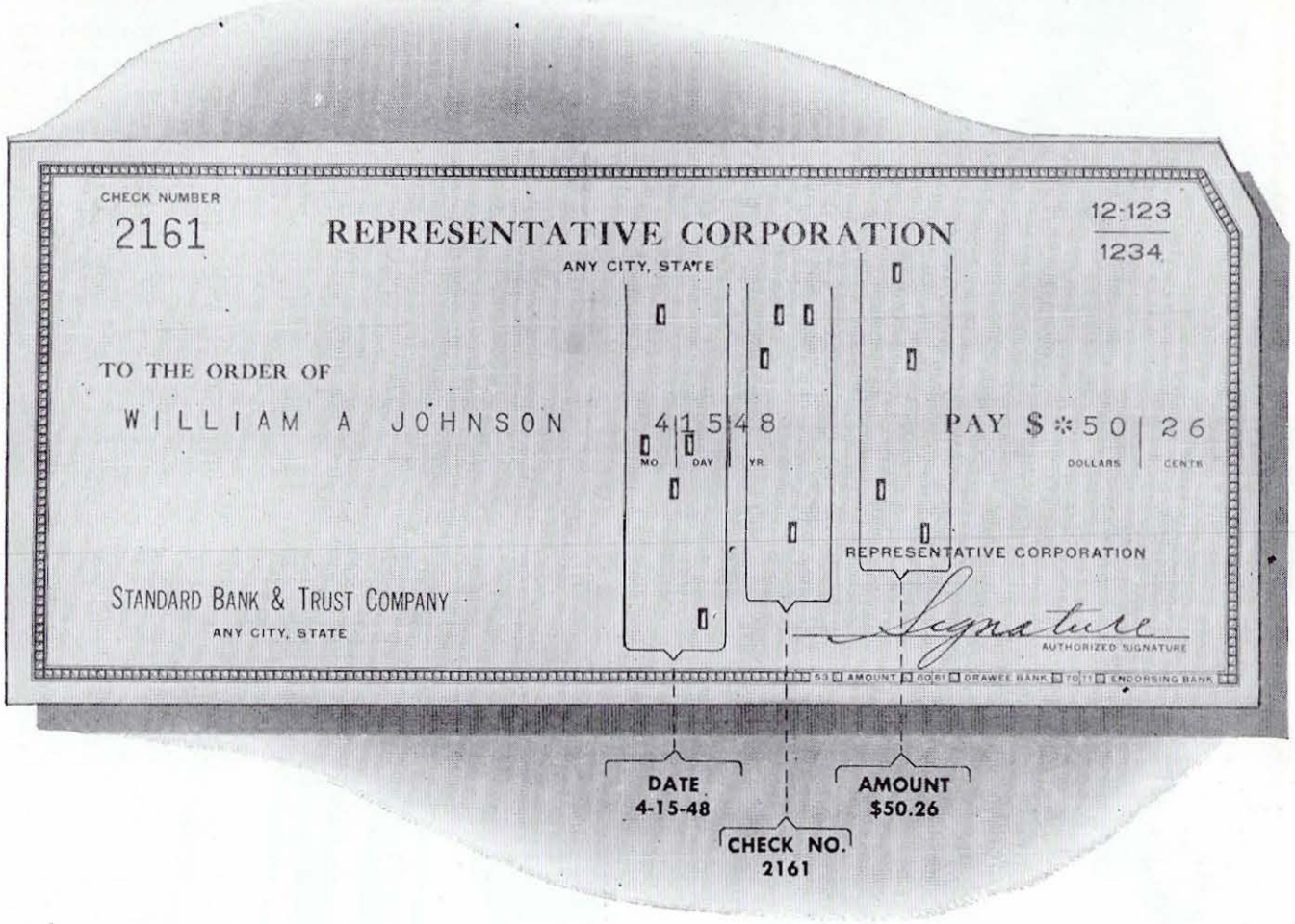

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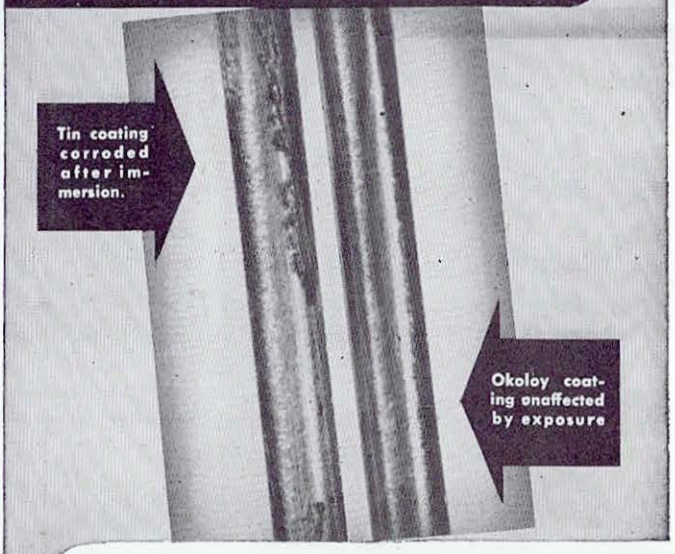

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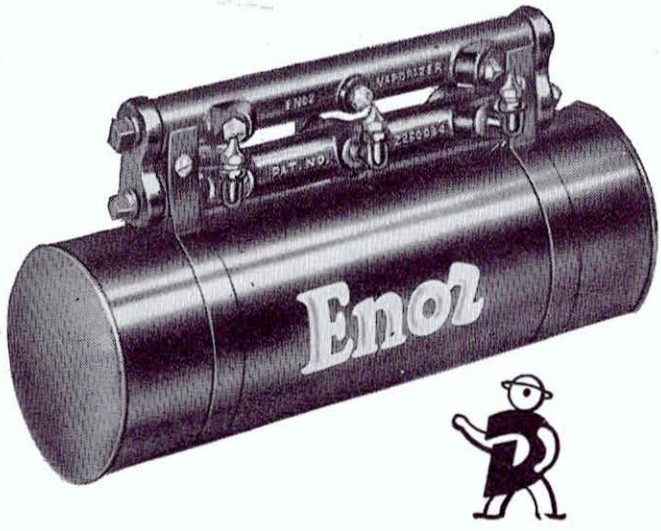

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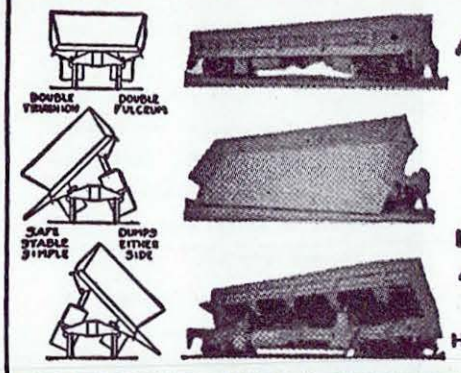

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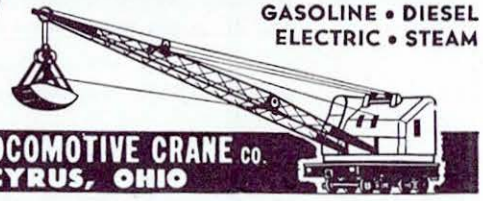

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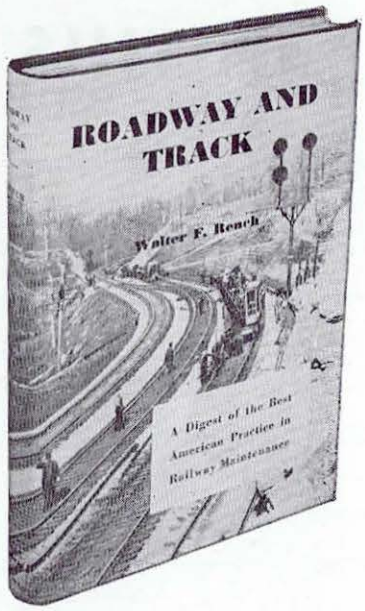
Formerly Supervisor, Pennsylvania Railroad



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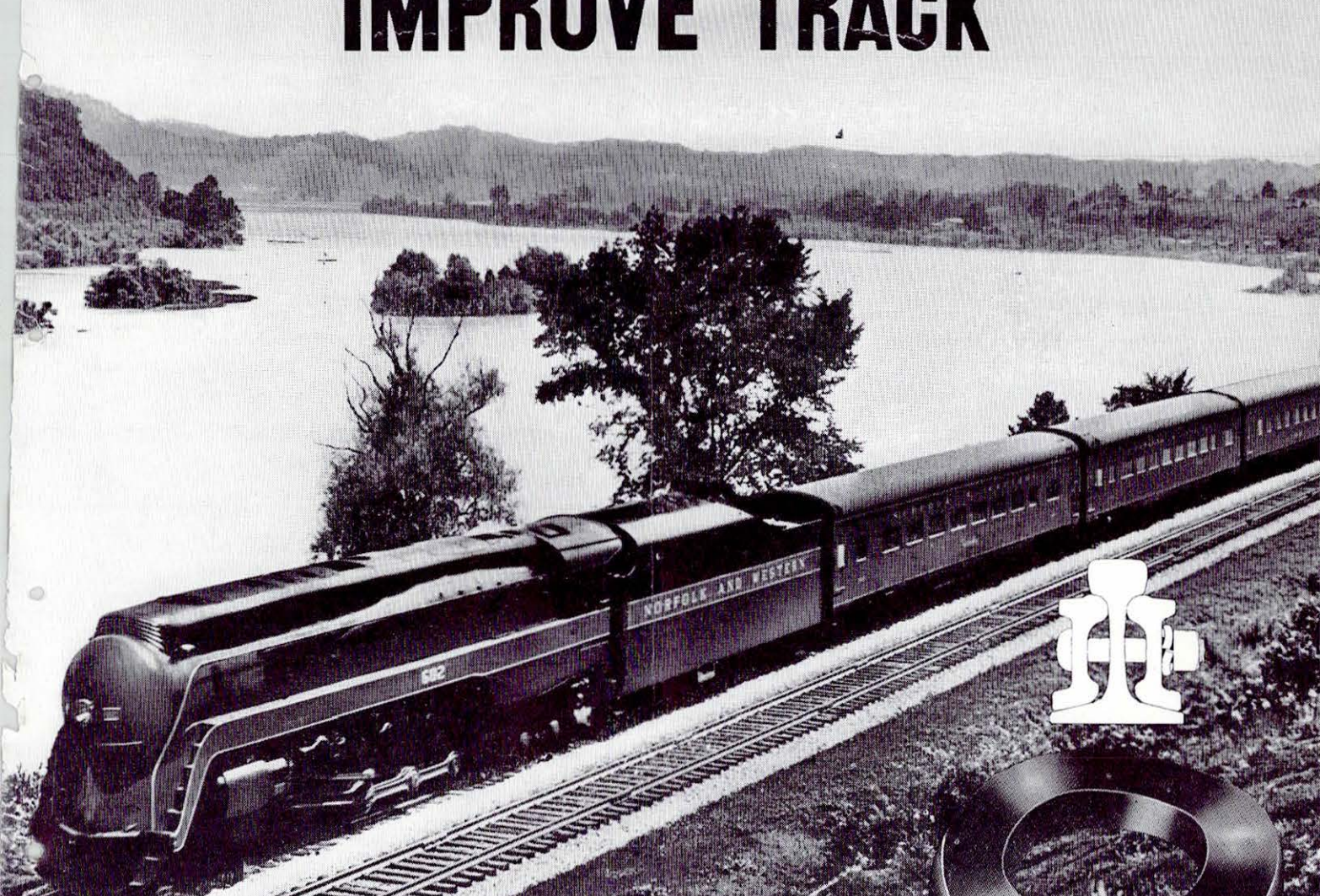

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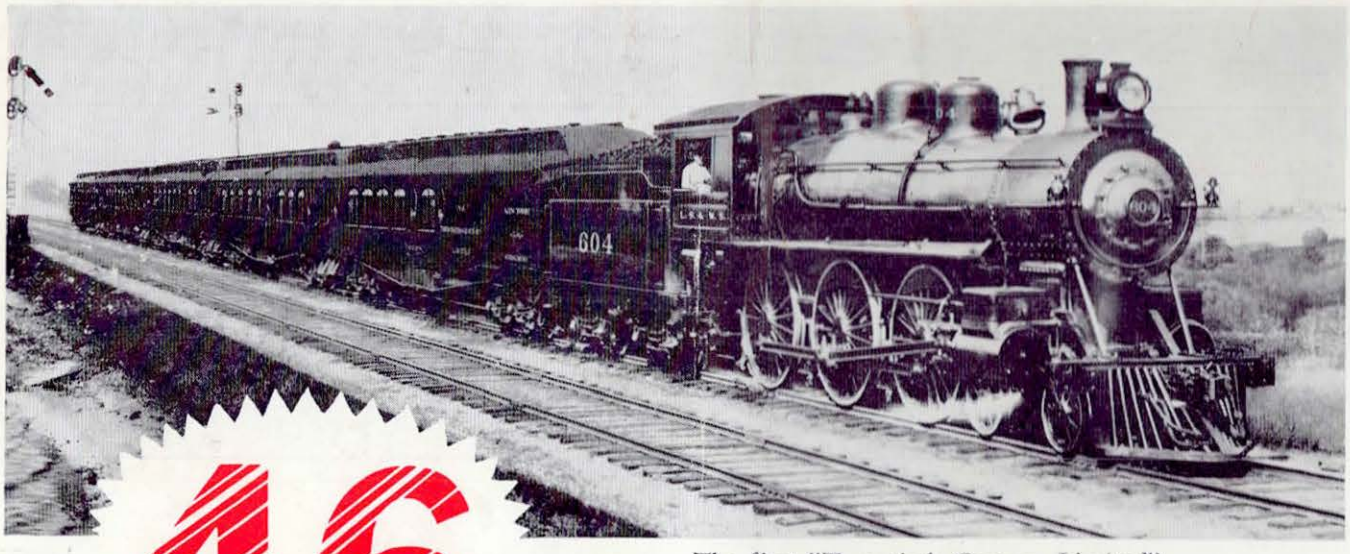

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